

The Organizational Impact of Presenteeism among Key Healthcare Workers due to the COVID-19 Pandemic

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Shelley I. White-Means, PhD¹ , Carol L. Warren, PhD, MBA, LCSW, RN-BC², and Ahmad Reshad Osmani, PhD, MD³

Introduction

This manuscript examines presenteeism (when employees come to work and are not fully functional due to health conditions) and its role in impacting two groups of essential healthcare workers practicing in Memphis, Tennessee, during the COVID-19 pandemic. Specifically, this study measures presenteeism among minority and non-minority nurses and respiratory therapists who provide direct patient care. The phenomenon of presenteeism is defined as an undesirable health outcome that results in lowered workforce productivity. Presenteeism among healthcare workers can impact the quality of care, medical errors, financial losses to organizations, and employee burnout. This study gives special attention to behavioral health conditions that are closely associated with presenteeism (Homrich et al., 2020; Warren, 2009; Warren et al., 2011) and concludes with recommendations for policies and practices that healthcare institutions can implement to decrease the likelihood of increased presenteeism. The coronavirus disease 2019 (COVID-19) pandemic caused by the SARS-CoV-2 virus has presented new health challenges for our healthcare delivery system. A virus that knows no geographical boundaries, SARS-CoV-2 is no respecter of race/ethnicity, privilege, or character. The pandemic's wave of death and illness has disproportionately impacted minorities. It has highlighted for common view and taken

¹Professor and Director, The University of Tennessee Health Science Center, College of Graduate Health Sciences and CHEER, 910 Madison Suite 317, Memphis, TN 38163

²Consultant, University of Tennessee Health Science Center, College of Graduate Health Sciences and CHEER, 910 Madison Suite 317, Memphis, TN 38163

³Assistant Professor of Economics, College of Business and Social Sciences, University of Louisiana at Monroe, Hemphill Hall, Room 157, 700 University Ave., Monroe, LA 71209

Corresponding Author:

Shelley I. White-Means, PhD., Professor and Director, The University of Tennessee Health Science Center, College of Graduate Health Sciences and CHEER, 910 Madison Suite 317, Memphis, TN 38163.

Email: swhiteme@uthsc.edu

away the ability to ignore the inequities of social and economic determinants of health and their connections to disparities in health outcomes. According to the national COVID-19 Data Tracker for September 2020, Black patients accounted for 90 deaths per 100,000 compared with 38 deaths per 100,000 for White patients (The COVID Tracking Project, 2021). Thus, the mortality rate was almost 2.4 times higher for Black patients during the study period reported in this manuscript.

Is there a more widespread impact of COVID-19, not solely on health and health disparities in the community but also in workplaces where exposures to and treatment of COVID-19 occur? This paper addresses two main questions: 1) Did COVID-19 impact presenteeism outcomes among nurses and respiratory therapists in Memphis, Tennessee? 2) Were presenteeism outcomes significantly different for healthcare workers from communities of color (COC) and White healthcare workers during COVID-19?

During the COVID-19 pandemic, nurses and respiratory therapists had critical roles in providing 24-hour, 7-day-a-week bedside care for patients with a disease for which there was limited treatment and limited understanding about the efficacy of newly available vaccines. Nurses and respiratory therapists provided most bedside care to COVID-19 patients and often substituted for the patient's family members, who had restricted physical access for supportive caregiving. COVID-19 has added to these responsibilities the challenge of insufficient or nonexistent tools of protection from the disease in the form of personal protective equipment (PPE) and workplace instability issues such as hiring freezes, workplace reassignments, and workforce reductions for employees in supportive roles to healthcare providers, such as unit coordinators, housekeepers, assistants, clerks, and some technicians (The Lancet, 2020). Thus, it is vital that we understand how presenteeism impacted these workers.

With its large population of black healthcare consumers, we believe that data from Memphis adds additional richness to the body of knowledge on disparities in health outcomes across racial groups. The geographic area of metropolitan Memphis has a population of more than 1.3 million. Fifty-two percent (52%) of the city's population identifies as Black, yet in April 2020, 68% of coronavirus cases in Memphis were Black (Hardiman, 2020). The pandemic's disproportionate impact on Memphis' Black population has created a racial disparity similar to that seen nationally in other geographic areas with a high percentage Black population (Zephyrin et al., 2020). Memphis also provides a valuable source from which to derive a survey sample because, not only are there reported disparities in COVID-19, but Memphis has a systemic pattern of racial disparities in most disease states. Memphis ranks first in the worst nationally in disparities in many health outcomes, e.g., Memphis has ranked among the highest in the nation for disparities in breast health outcomes (White-Means et al., 2017; Whitman et al., 2012). A survey of nurses and respiratory therapists in Memphis benefits from the ability to include insights from comparable numbers of COC and non-COC healthcare workers. While nationally, Black nurses are 7.8% of the RN labor force, (U.S. Department of Health & Human Services, Health Resources & Services Administration, National Center for Health Workforce Analysis, 2019) in Memphis Black nurses are 31.3% of the RN labor force (Tennessee Dept of Finance & Administration).

The contributions of this paper are threefold. First, this is one of the early manuscripts related to health and labor market impacts of COVID-19 on healthcare workers who live and serve in racially and ethnically diverse, racially segregated metropolitan areas of the U.S. Second, our rich survey data allow us to disentangle the physical, mental, and productivity effects of COVID-19 on nurses and respiratory therapist. Third, our paper evaluates the disproportionate impacts of COVID-19 on Black healthcare workers.

The findings of this work inform both public policy and practice in at least two ways. First, it allows us to understand factors associated with disproportional effects of COVID-19 on Black communities. Second, it informs about needed modifications in workplace practices and policy to reduce the adverse effects of COVID-19.

What is new about our results is that higher levels of presenteeism have been reported during the COVID-19 pandemic than observed previously. In addition to behavioral health concerns already facing healthcare workers, including depression and anxiety, we now include traumatic stress responses not previously reported among the more common illnesses associated in the literature with presenteeism. We report a significant and positive association between stress response and presenteeism, which is of particular concern in the contagious environment of a pandemic illness.

Literature Review

Presenteeism and Healthcare Workers

Studies of presenteeism among healthcare workers other than nurses have been scarce in recent years. Current literature indicates that nurses are four times more likely to exhibit presenteeism compared with workers in other occupations. This has an overall negative impact on patient safety as measured by increased numbers of falls, medication errors, staff-to-patient disease transmission, and other problems (Lui & Johnston, 2019). In fact, presenteeism has been a concern for all direct-care providers, including physicians, medical residents, and pharmacists. A review of the literature revealed that presenteeism affects 40–50% of all healthcare practitioners at any given time (Homrich et al., 2020; Warren, 2009; Warren et al., 2011).

Presenteeism experienced by healthcare providers is often most highly correlated with health conditions that impact cognition or thinking. Healthcare providers are considered “knowledge workers” and see their abilities affected by symptoms of anxiety, depression, traumatic stress, and fatigue that can be detrimental to the health and safety of the workers themselves, the patients they treat, and the organizations they represent. In the results of a 2007–2008 Warren et al. (Warren, 2009; Warren et al., 2011) online survey of a cross-sectional convenience sample of 226 nurses and pharmacists, levels of depression were reported that were higher than national norms of worker presenteeism (Warren, 2009; Warren et al., 2011). Among nurses, 22.7% indicated depressive symptoms, 17.5% reported anxiety, 26% said they had problems sleeping, and 17.5% reported chronic fatigue/low energy levels (Warren, 2009; Warren et al.,

2011). The overall health-related workforce productivity determined that presenteeism was an issue for 47% of the workforce that cost employers \$12,700 per nurse in 2011 wage equivalence (Warren et al., 2011). Since these factors can affect life or death outcomes for patients, (Lui & Johnston, 2019; Zhang et al., 2015) Warren suggested that additional research in this area is critically needed to quantify better and address the impact of presenteeism on healthcare workers' productivity and behavioral health outcomes (Warren, 2009).

Presenteeism, Race and Health Disparities

The literature linking presenteeism and race is scanty at best. Warren et al. (Warren, 2009; Warren et al., 2011) test for racial differences in presenteeism among nurses and pharmacists. Zhang et al. (2015) include race as a control variable in accounting for differences in wages and productivity losses associated with presenteeism but do not report the regression coefficient for race.

The literature linking presenteeism and health disparities also is limited. This is in part because most of the emphasis in exploring presenteeism is on its impact on labor market productivity. Nonetheless, due to presenteeism's association with one's ability to be mentally present while at work, presenteeism is a behavioral health outcome (Fujino, 2018; Kwon, 2020) for which, like other health outcomes, disparities may exist.

The general literature on factors associated with health disparities may help us glean insights about why there may be racial disparities in presenteeism. Initially proposed by Uri Bronfenbrenner (1977) the socio-ecological model is commonly used in health disparities research literature to explain disparities in health outcomes. It posits that since health is determined at six levels (organ/genetic, individual, interpersonal, institutional, community and population), racial health disparities occur due to racial differences in experiences in any or all these levels. For example, if there are differences in experiences by race in one's work environment and those experiences are connected to health outcomes, one would expect to see disparities in health outcomes. Similarly, if there are racial differences in the structural characteristics of one's residential community (e.g., access to healthy food) and those structural differences are associated with health outcomes (e.g., greater incidence of disease states), one would expect to see disparities in health outcomes.

The literature reports that institutional level racism may affect decisions in health-care institutions about what areas in a facility direct service providers will work and on what shift they are expected to work, (Hall & Fields, 2013) such that these assignments may differ by race. Further Hall (Hall & Fields, 2013) notes that in healthcare practice, the mainstream majority often exert power to influence how racism and white privilege affect the implementation of care, development of policies, research foci, and processes of nursing education. Further, at the institutional level, there are decisions about differences in workplace earnings opportunities and reward systems by race that impact worker decisions about accepting workplace assignments or even decisions about remaining in the workplace as a health caregiver (Williams et al., 2019), as well as

one's health. We know that patient outcomes during COVID-19 differed by race. Deaths were significantly and disproportionately higher for Black patients. One might purport that there was a difference in the intensity of COVID-19 stressors Black healthcare workers face as they saw Black patients experiencing these disproportionate deaths and feeling helpless to stop it. If these racial differences in institutional decision-making and experiences influence health, then the socio-ecological model would predict that they may result in racial disparities in health (including presenteeism).

Similarly, racial disparities in the communities (or at the community level) where nurses and respiratory therapists live may be associated with racial disparities in presenteeism. Black healthcare workers, particularly those who live in large metropolitan areas, are more likely to live in communities with high levels of racial residential segregation, i.e., communities with racially disparate health outcomes. These workers were more likely to live in communities with higher rates of deaths and exposures to COVID-19 by family, neighbors, friends, church members, and school-age children. Thus, they face a higher risk of experiencing COVID-19, as well as dying from it, due to their race, potentially resulting in greater presenteeism.

Behavioral Health and the COVID-19 Pandemic

Among adults in the U.S., the prevalence of depressive symptoms during the COVID-19 pandemic is triple that of pre-pandemic levels (Ettman et al., 2020). Poverty and pandemic-related stressors such as job loss, the death of someone close to COVID-19, and financial problems were statistically significant factors associated with the prevalence of depression (Ettman et al., 2020). In response to findings from China, more than 25% of the general population experienced moderate to severe levels of stress or anxiety-related symptoms in response to COVID-19 (Qiu et al., 2020; Wang et al., 2020). Subsequent research performed in China and the United States led to the development of an empirically sound measurement tool designed for use among the general public called the COVID-19 Stress Scale (CSS) (Hall & Fields, 2013). The CSS study focused on a general fear of COVID-19 and on stress and anxiety-related symptoms, including fear of becoming infected, fear of contact with possibly contaminated objects/surfaces, fear of foreigners who might carry the infection, fear of job loss for self or relatives, compulsive checking or vigilance, and traumatic stress symptoms related to the pandemic. The scale was intended to be adaptable for use in future pandemics (Taylor et al., 2020).

To our knowledge, there are no published studies using the CSS metric or describing symptoms of depression that are explicitly focused on essential healthcare providers and no studies that emphasize the behavioral health of essential minority healthcare workers during the COVID-19 pandemic. This current study on nurses and respiratory therapists in Memphis uses applicable scales from the CSS metric to determine the behavioral health impact of COVID-19 on nurses and respiratory therapists as it relates to concerns raised by practitioners and widely reported in the media regarding fears and traumatic stress symptoms, such as nightmares and intrusive thoughts.

Methods

Data and Sample

Prior to implementation, this study was approved by the Institutional Review Board at the University of Tennessee Health Science Center. Participants provided consent via a web-based consent form before completing the survey. The survey was self-administered during August-September 2020.

Potential participants were invited via contact listings of Memphis licensed nurses and registered/certified respiratory therapists obtained from the Tennessee Board of Health and via snowball sampling in which study participants were asked to recruit other participants. Our survey was administered from August 5, 2020 through September 10, 2020. A total of 120 respondents attempted to complete the survey, although one person declined to participate after reviewing the informed consent form. Another 22 respondents were excluded when they failed to meet an important inclusion criterion after answering 'no' to the question: "Did you provide direct hands-on clinical care to patients consistently for at least 3 days or 24 hour a week between March 2020 to current time?" Therefore, our final study sample size included responses from 97 participants. We included all participants in our demographic data reports. In the reporting for the SPS-6 presenteeism scale, we did not include data for those participants who indicated that their health status did not change while working in a COVID-19 environment. Our study database is missing some data where participants did not respond to some questions.

Survey and Variable Measurement of Presenteeism, Illness Related Productivity Loss, and Other Behavioral Health Indicators

The web-based IRB-approved survey included an indicator of COVID-19 experience and prevalence among participants' network, indicators of presenteeism and behavioral health status, and sociodemographic characteristics (age, gender, race/ethnicity, education).

The survey tool for this study was constructed by examining the relevant literature in the domains of presenteeism, behavioral health (depression, anxiety, and stress), COVID-19-related stress, work climate, and home climate. Questions from the following tools were adapted to form the survey for this study.

Presenteeism Prevalence and Impact on Work Activities. We measured presenteeism (going to work when ill and experiencing impacts on productivity) using a two-part process (Baldonado-Mosteiro et al., 2020). First, participants were asked the question, "Do you believe that your health has been impacted by working during the COVID-19 pandemic since March 2020?," reflecting **presenteeism prevalence**. If they responded in the affirmative, we applied the good psychometric properties of the **Stanford Presenteeism Scale (SPS-6) to study the ways presenteeism impacts the health worker** (Baldonado-Mosteiro et al., 2020; Koopman et al., 2002). The SPS-6 metric is one of the most prominent instruments available and is easy to implement. This two-dimensional scale measures (1) the ability to complete work projects and (2) the ability to avoid distractions, concentrate, or focus. The SP6 metric includes responses to six

questions (**B1-B6**) that are scored on a 5-point Likert-type scale. Total scores range from 6–30. The higher the score, the lower the presenteeism impact and the greater the ability to engage in work activities. Questions **B2, B5 and B6** reflect the ability to complete tasks and are scored from 1 to 5, with 1 representing strongly disagree and 5 strongly agree. Questions **B1, B3 and B4** measure the ability to focus and avoid distractions and are scored 1–5, with 5 representing strongly disagree and 1 strongly agree. The overall score indicates the relationship among presenteeism, health problems, and productivity among employees. For the present study, it is used to assess the ability to concentrate and complete one's job despite experiencing health problems (Baldonado-Mosteiro et al., 2020).

Self-Reported Work Productivity. We included the SPS-6, which determined whether respondents feel that they have experienced lowered work productivity due to illness but did not quantify the self-reported amount of lost productivity. The **Work Productivity and Activity Impairment (WPAI) Questionnaire** was developed to measure the effects of general health and symptom severity on work productivity and regular activities and is in the public domain (Evans, 2006; Reilly et al., 2004). Therefore, we adapted one question from the WPAI study instrument to quantify the overall work productivity related to health, using a 10-point scale. Each of the 10 points was associated with a 10% decrement in usual productivity. Decrements of 10%-30% are considered lower levels of reduced productivity, while decrements of 40% or greater are considered substantial losses of productivity.

Behavioral Health (Depression, Anxiety, and Traumatic Stress). We used two instruments to screen for symptoms of depression, anxiety, and traumatic stress. The first was the four-item Patient Health Questionnaire 4 (**PHQ4**) tool that combines the **PHQ2** screen for symptoms of depression and the **GAD2** screen for symptoms of generalized anxiety disorder (Kroenke et al., 2009; Löwe et al., 2010). Specifically, the questions are:

“Over the past two weeks, how often have you been bothered by the following problems?”

1. Feeling nervous, anxious, or on edge
2. Not being able to stop or control worrying
3. Little interest or pleasure in doing things
4. Feeling down, depressed, or hopeless”

The **PHQ-4 tool** is commonplace, fast, valid, reliable, and available free of charge from Pfizer's Public Health Information (PHQ) Screeners website (www.phqscreeners.com), with no requirement to obtain permission for its use. Response options were not at all (0), several days (1), more than half the days (2), or nearly every day (3), where the scores for each choice are indicated in parentheses. **The first two questions are derived from GAD2 and the last two questions from PHQ2.** A score ≥ 3 for the PHQ2 questions reflects depressive symptoms, while a score ≥ 3 for the GAD2 questions reflects symptoms of generalized anxiety disorder. The total score is determined

by adding together the scores of each of the four PHQ4 items and indicates depressive symptoms and anxiety disorder with the following values: normal (0–2), mild (3–5), moderate (6–8), and severe (9–12).

The second tool consisted of select questions measuring traumatic stress reactions that were captured by the **CSS** (Taylor et al., 2020). Due to concerns raised in reports from practitioners and from the media, we added questions to determine how pervasive were the symptoms of traumatic stress in nurses and respiratory therapists. Symptoms such as avoidance, re-experiencing, negative cognitions, nightmares, and arousal were widely reported. The specific question asked was, “over the past two weeks, how often have you had an emotional response to a traumatic experience that you relive either through nightmares, intrusive thoughts, increased sensitivity, or increased irritability/anger?” The same response choices were used for this question as for the PHQ4, with choices scored from 0 to 3. Response options were not at all (0), several days (1), more than half the days (2), or nearly every day (3), where the scores for each choice are indicated in parentheses.

Work Climate and Home Climate. We used questions selected from two instruments to determine the work and home climate of respondents. Questions from the **CSS** regarding changes in the home environment due to COVID-19 were included to assess home climate (Taylor et al., 2020). Select questions from the **Patient Safety Climate (PSC) in Work Environment** study were added to measure four areas pertaining to the work climate: assistance from others & organizations (ASST), leadership message of support (LMS), resources and work environment (RWE), and error reporting behavior (ERB) (Avramchuk & McGuire, 2018).

To report on **COVID-19 prevalence**, we asked respondents if they had been diagnosed with COVID-19 at any time during the pandemic. We did not ask whether they had a relapse or a reoccurrence. We wanted to be able to compare prevalence in the work environment and in the community.

Results

Table 1 reports the demographic characteristics of our survey sample by race. Almost half the sample participants (46%) were Black. Due to the high concentration of women in this sector of the labor force, as expected, most participants were female (93% of Blacks and 83% of Whites). Participants ranged in age from 25 to 44 years. The majority possessed training at the bachelor’s degree level or higher. The sample included at least 54.6% nurses and 42% respiratory therapists. The majority of Black participants were registered respiratory therapists, while the majority of White participants were registered nurses.

Presenteeism, Productivity, Behavioral Health, Work and Home Climate, and COVID-19 Prevalence

Table 2 provides insights on how health outcomes of nurses and respiratory therapists have been impacted by working during the pandemic. Surveys were completed during the time when Memphis was in Phase 2 of reopening after the Shelby County, TN

Table 1. Sample Characteristics of Nurses and Respiratory Therapist Essential Workers During the COVID-19 Pandemic Across Racial/Ethnic Groups, Memphis, TN (August-September 2020).

Age groups	Black (%)	White (%)	Overall (%)
18–24	4.55	5.71	4.94
25–34	36.36	40.0	38.27
35–44	36.36	22.86	29.63
45–54	9.09	8.57	8.64
55–64	11.36	17.14	14.81
65–74	2.27	5.71	3.70
Gender			
Female	93.18	82.86	88.89
Male	6.82	17.14	11.11
Education			
Associate Degree	13.95	8.57	09.28
Bachelor's degree	46.51	62.86	43.30
Doctorate Degree	4.65	17.14	09.28
Master's Degree	34.88	11.43	20.62
Profession			
RN (registered nurse)	30.23	51.43	37.63
RRT (registered respiratory therapist)	51.16	28.57	38.71
CRT (certified respiratory therapist)	9.30	0	4.30
NP (nurse practitioner)	4.65	17.14	13.98
Other Nurse	4.65	2.86	5.38

stay-at-home shutdown, COVID-19 cases were rising, positivity rates were above 10 percent, and hospital bed occupancy rates were reaching capacity. In Memphis, Phase 2 included adherence to social distancing, no groups of more than 50, occupancy of public facilities and restaurants limited to 50% of building capacity, and face masks required for employees (Memphis Commercial Appeal, 2020).

As indicated in Table 2 (column 1), COVID-19 impacted the health of nurses and respiratory therapists in Memphis. Our data indicate 77% of respondents reported having remained at work while impacted by their own health conditions, indicating that they exhibited presenteeism while working in the COVID-19 pandemic environment. Approximately 38% of participants responded that working during the COVID-19 pandemic impacted their emotional health, while approximately 40% of participants indicated that both their physical and emotional health were impacted.

The **SPS-6** questionnaire details the ways presenteeism impacted their work. Data from the two subscales of the SPS-6 measure the ability to 1) complete work tasks and 2) concentrate/focus/avoid distractions. Values of the subscales can range from 3 to 15, with lower scores indicating greater difficulties in performing work activities while participants felt ill. Data in Table 2 (column 1) reflect declines in the ability to

Table 2. Nurses and Respiratory Therapist' Self-Assessment of Health, Presenteeism, Productivity, Behavioral Health, Work and Home Climate and COVID-19 Prevalence, Memphis, TN (August-September 2020).

	Percentage Total (Sample Size)	Percentage Blacks (Sample Size)	Percentage White (Sample Size)	T-stat/ Pearson Chi-square
1. Do you believe that your health has been impacted by working during the COVID-19 pandemic since March 2020?	77.41 (72)	84.09 (37)	74.28 (26)	3.31***
No, no impact different than prior to the pandemic	22.58 (21)	13.95 (6)	25.71 (9)	Pearson Chi-Square(4) = 16***
Yes, physical health condition	0	0	0	
Yes, emotional health condition	37.63 (35)	37.21 (16)	54.29 (19)	
Yes, both physical and emotional health condition	39.78 (37)	48.84 (21)	20.0 (7)	
2. Impact of Health on Work ability in the past month (Please describe your work experiences in the past month)	Mean Total (Sample Size)	Mean Black (Sample Size)	Mean White (Sample Size)	T-stat
Stanford Presenteeism Scale (SPS-6)	19.66 (66)	19.71 (35)	19.24 (25)	-0.745
B.1 Because of my health condition, the stresses of my job were much harder to handle.	2.60 (68)	2.89 (37)	3.2 (25)	-0.308
B.2 Despite having my health condition, I was able to finish hard tasks in my work.	3.99 (67)	3.44 (36)	3.2 (25)	0.244
B.3 My health condition distracted me from taking pleasure in my work	2.75 (68)	3.51 (37)	3.04 (25)	0.474
B.4 I felt hopeless about finishing certain work tasks, due to my health condition	3.48 (67)	3.75 (36)	3.48 (25)	0.27
B.5 At work, I was able to focus on achieving my goals despite my health condition.	3.62 (68)	2.95 (37)	3.48 (25)	-0.094
B.6 Despite having my health condition(s), I felt energetic enough to complete all my work.	3.09 (67)	3.03 (35)	3.23 (26)	-0.202

(continued)

Table 2. (continued)

	Percentage Total (Sample Size)	Percentage Blacks (Sample Size)	Percentage White (Sample Size)	T-stat/ Pearson Chi-square
Ability to complete work tasks subcomponent (Sum of scores for B2, B5, and B6)				
	Mean Total Sample Size	Mean Black Sample Size	Mean White Sample Size	T-stat
	10.75 (67)	9.54 (35)	9.52 (25)	0.023
Ability to focus, concentrate and avoid distractions subcomponent (Sum of scores for B1, B3, B4)				
	8.91 (67)	10.22 (36)	9.72 (25)	0.502
3. Quantifying Work Productivity Decrement (How much did your health condition(s) affect your work productivity while working in the past month?) WAPI	Percentage Total (Sample Size)	Percentage Black Sample Size = 44)	Percentage White Sample Size = 35)	Pearson Chi-Square(1) = 29***
0-0 (No effect)	33.33 (29)	31.82 (14)	37.14 (13)	
1- 1 0%	8.05 (7)	9.09 (4)	8.57 (3)	
2- 20%	9.20 (8)	6.82 (3)	5.71 (2)	
3- 30%	11.49 (10)	9.09 (4)	14.29 (5)	
4- 40%	6.90 (6)	11.36 (5)	2.86 (1)	
5- 50%	10.34 (9)	13.64 (6)	5.71 (2)	
6- 60%	11.49 (10)	4.55 (2)	20 (7)	
7- 70%	2.30 (2)	4.55 (2)	0	
8- 80%	5.75 (5)	6.82 (3)	2 (2)	
9- 90%	0	2.27 (2)	0	
10- 100% (Completely Prevented)	1.15 (1)	2.27 (1)	0	

(continued)

Table 2. (continued)

	Percentage Total (Sample Size)	Percentage Blacks (Sample Size)	Percentage White (Sample Size)	T-stat/ Pearson Chi-square
4. Behavioral health outcomes	Mean Total (Sample Size)	Mean Black (Sample Size)	Mean White (Sample Size)	T-stat
A. Depression Symptoms as scored on the PHQ2				
Depression Symptoms	4.93 (66)	4.97 (31)	4.88 (26)	1.77*
No Depression Symptoms	2.38 (18)	2.20 (13)	2.55 (9)	
B. Anxiety Symptoms as scored on the GAD2				
Anxiety Symptoms	4.54 (65)	4.72 (28)	4.35 (27)	-1.89*
No Anxiety Symptoms	2.25 (17)	2.20 (15)	2.32 (8)	
C. Traumatic Stress Responses				
	2.917 (83)	2.84 (37)	2.92 (26)	-1.38
5. Environmental Factors A. Work Climate	Percentage Total (Sample Size)	Percentage Black (Sample Size)	Percentage White (Sample Size)	T-stat
Do you feel that workers at your workplace get enough assistance to practice safely?				
Yes	45.12 (37)	45.45 (20)	42.86 (15)	1.75*
No	54.88 (45)	54.55 (24)	57.14 (20)	
Has your workplace made changes to scheduling of work hours and opportunities for work absences (e.g., paid sick leave, paid time off) during COVID-19?				
Yes	54.88 (45)	52.27 (23)	42.86 (15)	3.32***
No	45.12 (37)	47.73 (21)	57.14 (20)	

(continued)

Table 2. (continued)

	Percentage Total (Sample Size)	Percentage Blacks (Sample Size)	Percentage White (Sample Size)	T-stat/ Pearson Chi-square
5. Environmental Factors A. Work Climate				
When you are not sure what to do at work doing this unprecedented time, can you easily approach management and coworkers for assistance?				
Yes	76.83 (63)	72.73 (32)	80 (28)	-2.73***
No	23.17 (19)	27.27 (12)	20 (7)	
Do you feel that you have been supplied adequate access to personal protective equipment (PPE) to provide care safety?				
Yes	55.91 (52)	59.09 (26)	71.43 (25)	-3.67***
No	33.33 (31)	40.91 (18)	28.57 (10)	
5. Environmental Factors B. Home Climate				
Has your family life changed since the COVID-19 pandemic?				
Yes	84.15 (69)	86.36 (38)	82.86 (31)	1.75*
No	15.85 (13)	13.64 (6)	17.14 (7)	
6. COVID-19 Diagnosis Prevalence Among Workers¹				
	10.30 (10)	22.73 (10)	0	

¹ 100% of COVID-19 cases were among Black workers. * $p < .1$; ** $p < .05$; *** $p < .01$ show significance levels

engage in work activities. Nurses and respiratory therapists faced the greater difficulty staying focused and avoiding distractions than in completing work tasks.

According to data derived from the **WAPI** instrument, nurses and respiratory therapists reported that they were less productive during the COVID-19 pandemic. The work productivity WAPI indicators were based on a Likert-scale that ranges from 0 to 10, with 0 being no impact and 10 being work productivity completely prevented (Table 2). Each point reported on the Likert-scale indicates a 10% decrement from their norm in productivity (Evans, 2006; Reilly et al., 2004). Almost 67% of participants experienced a reduction in overall work productivity. Approximately 25% percent felt that they lost productivity at a rate of 10–30%, and 32% felt they lost higher amounts of productivity at 40% or greater. One respondent indicated that their productivity was reduced by 100%. In essence, this employee was at work and unable to perform any of their work activities, yet unable to stay home because they were deemed to be an essential worker.

Using the four-item **PHQ4**, we discerned that 68% of respondents were experiencing depression symptoms and about 67% were experiencing anxiety symptoms. Most concerning was the assessment of traumatic stress response (TSR) symptoms based on the **CSS**. On a scale of 0 to 3, the average respondent's score was 2.92, suggesting substantial TSR symptoms for this sample.

Many of the nurses and respiratory therapists who responded to this study stated that they found the work climate challenging (Table 2, column 1). Approximately 55% of participants said they did not feel their workplace provided them with enough assistance to practice their profession safely and approximately 45% indicated that they lacked opportunities to reschedule work hours or work absences, including being unable to take paid sick leave or paid personal leave or vacation. Thirty-three percent (33%) indicated that they did not have adequate access to PPE. Yet 77% reported that when they were not sure what to do during this unprecedented time, they felt that they could easily approach management or coworkers for assistance. As with most Americans, the pandemic significantly affected family life for this group, with approximately 84% of participants reporting impact on their families.

Due to extensive exposure to COVID-19-infected patients in the work environment, the possibility that nurses and respiratory therapist could contract the disease is high. Approximately 10% ($n = 10$) of our respondents reported that they had been diagnosed with COVID-19 before they completed the survey (Table 2).

Racial Differences

When the study outcomes were examined as a function of race, the results suggested that the COVID-19 work environment did not provide an equal opportunity experience (Table 2). White participants were most likely to state that their health had not been impacted by working during the COVID-19 pandemic. While only marginally significant ($p = 0.08$), White participants exhibited a 74% prevalence of presenteeism, compared with a prevalence of 84% for Black participants. Among those experiencing presenteeism, there were statistically significant racial differences in the impact on

health of working during the COVID-19 pandemic; While White respondents were more likely than Black respondents to experience impacts on their emotional health alone, Black participants were more likely than White participants to experience impacts on both their physical and emotional health. Under conditions of presenteeism, there were no statistically significant racial differences in either the ability to focus and avoid distractions or the ability to complete work tasks.

However, statistically significant racial differences in work productivity decrement occurred; Black healthcare workers exhibited higher levels of work productivity decrement. Almost 16% of Black participants exhibited productivity decrements of 70% or higher, compared with 2% for White participants.

In keeping with findings for presenteeism and productivity decrement, Black healthcare workers scored higher on the PHQ2 and GAD2 sections of the PHQ-4 questionnaire and our results indicate marginal statistically significant racial differences in the likelihood of experiencing symptoms that indicated further assessment for depression and anxiety were indicated (Table 2).

Statistically significant racial differences in work climate are of particular note. White participants were significantly more likely than Blacks to report that when they were not sure what to do during this unprecedented time, they could easily approach management and coworkers for assistance, and they had been supplied with adequate PPE (Table 2). Black participants were more likely to report being able to schedule time off. Regarding home climate, only a marginally statistically significant racial difference was reported about whether family life had changed during the pandemic; Black participants were slightly more likely to report that their family life had changed during the COVID-19 pandemic.

Consistent with the community trend of COVID-19 prevalence being higher in the Black community, essential Black nurses and respiratory therapists were significantly more likely to report that they had been diagnosed with the disease. Indeed, 100% of the COVID-19 cases reported in study participants involved Black participants. These results are consistent with racial differences in how the COVID-19 workplace was experienced, with White nurses and respiratory therapists perceiving a more supportive work environment (Table 2).

Discussion

The findings from our online survey of essential healthcare workers focused on nurses and respiratory therapists for whom we confirmed experienced presenteeism while providing direct patient care during the COVID-19 pandemic. These workers exhibited physical and emotional health conditions but remained at work, albeit with lowered productivity. Study participants faced challenging work and home climates, exposure to COVID-19 from the patients they tended, and in some cases, contracted COVID-19. Their lived experience of a stressful and anxious time fraught with the risk of a deadly disease were not as acknowledged or publicized and the significance often underaddressed.

Previously published studies of nurses and other healthcare providers led us to expect pre-COVID-19 rates of presenteeism of approximately 40–50%, depression approximately 33%, and anxiety approximately 17% (Baldonado-Mosteiro et al., 2020; Warren et al., 2011). However, the current study found that during the COVID-19 pandemic, twice as many healthcare professionals experienced symptoms of depression (68%) and four times as many reported symptoms of anxiety and traumatic stress (67%). While 77% self-reported working while not feeling well or being ill (presenteeism), most participants could complete their work with admittedly distracted focus. These results suggest that there may be increased opportunities for the role of presenteeism in healthcare providers when serious injuries or transmission of disease among patients, such as occurred in past reports and might be expected to increase during a disease pandemic (Baldonado-Mosteiro et al., 2020). Consistent with other findings, expected health conditions among the workforce most affected by presenteeism would have been physical ailments compounded by mental conditions, inclusive of depression and anxiety.

We included a survey question on traumatic stress responses, not heretofore reported among the more common illnesses associated in the literature with presenteeism. Our findings on traumatic stress response indicate that this behavioral health outcome was substantial for healthcare workers during the pandemic. Both Black and White workers indicated that almost daily they experienced an emotional response to a traumatic experience that they relived either through nightmares, intrusive thoughts, increased sensitivity, or increased irritability/anger.

Previous studies of nurses and pharmacists showed no statistically significant racial differences in presenteeism prevalence, the ways in which productivity impacted the workers, or the decrement in productivity (Warren, 2009; Warren et al., 2011). However, the current study findings differed. We observed statistically significant racial differences in presenteeism and in the ways presenteeism impacted health. While presenteeism among White workers occurred primarily with impacts on emotional health, for Blacks it impacted both their physical and emotional health conditions. Additionally, Black participants exhibited significantly greater reductions in productivity.

The occupational environment differed for Black and White healthcare workers. White healthcare workers were significantly more likely than Black healthcare workers to feel that they could easily approach management and coworkers for assistance and to have adequate PPE. Such an ability was critical in the uncertain workplace environment of caring for patients with COVID-19.

It was deeply troubling for our study team to discover that 100% of the COVID-19 cases reported among our study's sample group were experienced by Black healthcare workers. Surely, this was a unique challenge for Black healthcare workers since almost one of each four Black workers contracted COVID-19. This result is consistent with local COVID-19 prevalence trends in the community.

Study Limitations

Despite the short timeframe for our data collection and the difficulty of getting busy and overworked essential workers to complete the survey, we obtain key actionable

insights. Ideally, we would have preferred to include a larger sample size and one that was large enough to differentiate nurse practitioners (NPs) from registered nurses (RNs) and respiratory therapists trained at the Bachelor's degree level from those with Associate degrees. This approach would have provided insights into nurses practicing at an advanced level and respiratory therapists whose bachelor's degree-level training spent more time on patient and worker safety and pandemic preparedness. The respiratory therapist professional organization's quest for specialty or advanced level designations could have also been adequately explored.

Additionally, because we did not ask workers to weigh in on the possibility that race, discrimination, culture or bias may have contributed to their experiences during COVID-19, we have reviewed theories that could possibly explain why workers experienced differences in the impacts of presenteeism or differences in workplace experiences across racial groups. An annual, or otherwise regular, reassessment using the current survey instrument might be warranted in the future to answer these questions.

Conclusions

The self-reported presenteeism among working nurses and respiratory therapists of all races providing direct patient care during the COVID-19 pandemic suggests that these workers often remained at work to care for their patients at a time when their own physical and mental health status prevented them from being fully productive. Moreover, prevalence of presenteeism among nurses and respiratory therapists occurred at a higher rate than in time periods prior to the COVID-19 pandemic.

Consequently, the results of this study suggested that unless the impact of COVID-19 on the general population improved in Memphis after our survey ended in September 2020, presenteeism would be expected to have continued at unsustainable levels. Indeed, we now know that our supposition was confirmed. A new and more extensive upward surge in COVID-19 daily cases (from a maximum of 400 daily to 700) began in October 2020, only to decline in March 2021 and then enter a third surge in July 2021 (maxing at 900 daily). Local news sources reported the healthcare labor force response. They noted that a surge in healthcare providers who have retired or left the healthcare workforce. Additionally, the newly prepared field hospital in Memphis, built to serve the overflow of COVID-19 hospital patients, was unable to open in December 2020 due to a nursing shortage. Hospital emergency rooms handled the bottlenecks in patient assignments to hospital beds. Understanding their value and the risks associated with providing services during the pandemic, some nurses and respiratory therapist chose to serve out-of-state as travel nurses and respiratory therapist, receiving higher compensation rates for their efforts. Respiratory therapists in other areas of the country have been reported to change from full- to part-time status.

Study participants did not feel their ability to provide healthcare was unlimited and provided clear evidence of physical and mental limits in their efforts during the pandemic. Large inefficiency chasms in healthcare systems that have employed nurses

and respiratory therapists during COVID-19 have illuminated important human capital issues. These issues most likely existed in Memphis and other cities prior to the stresses caused by the pandemic. Nonetheless, the ability of the many dedicated nurses and respiratory therapists to remain healthy and productive and to endure the stressful pandemic environment is at risk. This in turn suggests that costs, effectiveness, quality, and sustainability of healthcare appear to be at risk during the COVID-19 pandemic.

Health systems and the organizations that feed into them have not sufficiently reimaged healthcare provision or provider training to account for this and future pandemic illnesses, as evidenced by the inadequate number of trained healthcare professionals available during the COVID-19 pandemic. Healthcare systems must increase the supply of healthcare services by reimagining the scope of practice of existing direct care professionals, given the overlap of skills acquired across professions. Until now, expanding scopes of practice have not been supported by organized hospital and physician systems presumably due to concerns that doing so might increase competition and transfer income between professions. During the COVID-19 pandemic, expanded scope for respiratory therapists could have provided much-needed practitioners to meet the increased demand for cardiopulmonary-related healthcare. The same is true for pharmacists who administer vaccines and perform other direct care procedures that call for more knowledge of the plethora of medicines needed to treat patients when there are not enough trained providers to provide these services safely. For a long time, there has been a failure to reimagine educating new healthcare professionals using strategies other than face-to-face training. The relative lack of efficient technological tools and virtual simulation in healthcare provider education is concerning in light of the shortages caused by the pandemic. In the same way astronauts use virtual simulation to train before they venture into outer space, the addition of similar virtual tools to the arsenal available to train healthcare providers could assist them to learn their professionals more efficiently.

Structural characteristics of the workplace and their resulting differential labor market experiences and accommodations by race were noted in this study. More White than Black healthcare workers felt that when they had questions and concerns, they were likely to be heard and assisted by management. White workers also were more likely to think they were protected by adequate access to safety supplies. The consequences of these unresolved disparities in workplace experience were heightened during the COVID-19 pandemic, resulting in greater likelihood of presenteeism impacts on health and productivity among Black healthcare workers.

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ORCID iD

Shelley I. White-Means  <https://orcid.org/0000-0003-3212-8060>

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