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Examining Racial Disparities in Unemployment Among Health Care Workers Before, During, and After the COVID-19 Pandemic

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Abstract Among the U.S. health care workforce, the COVID-19 pandemic appeared to greatly impact employment levels in 2020. However, no research has examined how the pandemic's impact on employment varied by racial/ethnic group or beyond the initial emergency year. Our study aimed to quantitatively evaluate workforce trends by race/ethnicity before, during, and after the COVID-19 pandemic. This study analyzed each March supplement of the Current Population Survey over a 5-year span (2018–2022). We restricted the sample to nurses, physician assistants, and other non-physician health care workers (HCW), per specific census occupation codes, and constructed an event-history study to test for differential effects from each year, as compared to 2019, on the proportion of employment between non-Hispanic White, non-Hispanic Black, Hispanic, non-Hispanic Native (American Indian, Alaska Native, Hawaiian Islander), and non-Hispanic Asian HCW. Results suggest that the pandemic's negative impact on the health care workforce disproportionately reduced employment for HCW self-identifying as Black or Indigenous. Rates for other groups increased 2–3 percentage points in 2020 but returned to prepandemic levels by 2022. However, for Black and Native HCW, the change was twice as large in 2021 and remained significantly higher in 2022 for Black HCW, providing more evidence that the burden of the COVID-19 pandemic disproportionately fell on people of color. Future research investigating how employment disruptions impacted the health care workforce and, potentially, health equity remains warranted. (*J Patient Cent Res Rev.* 2023;10:136-141.)

Keywords COVID-19; workforce; racial disparities; advanced practitioners; nurses; physician assistants, medical assistants, nursing aides; health equity

The COVID-19 public health emergency disrupted the workforce capacity of the U.S. health care system. Despite the greater need, fewer direct service health care providers worked in 2020.[1] According to a recent article published in the *Journal of the American Medical Association*, the pandemic's impact on unemployment (measured by receiving unemployment insurance) appeared to be greatest among non-physician health care workers.[1] Matta and Nicholas did not identify any racial disparities among health care workers seeking unemployment during 2020.[1] At first, this finding appears inconsistent with the evidence that Black, Indigenous, and People of Color (BIPOC) faced worse economic downturn during the initial phase of the COVID-19 pandemic.[2] However, racially minoritized populations faced greater barriers to accessing and obtaining emergency unemployment benefits.[3] In context of the evidence that health care workers may have stopped working, either through formal or informal absenteeism, additional investigation into how the pandemic may have impacted disparities in unemployment and workforce participation in 2020 and beyond is warranted.[4]

Nurse practitioners make up the fastest growing sector of any U.S. occupation, while physician assistants crack the top 20.[5,6] Nurses were also the most impacted by the pandemic in terms of job loss, absenteeism, burnout, and distress.[1,3,7-9] Most evidential reports, however, have focused on the health care sector as a whole and only in the immediate aftermath of the public health emergency.[1,9] The extent to which this disruption varied by race/ethnicity remains unknown, which limits policymakers' ability to address health care workforce disparities as we move beyond the public health emergency.

This study aimed to quantitatively evaluate workforce trends for nurse practitioners, physician assistants, registered nurses, medical assistants, and other non-physician health care workers by race/ethnicity before, during, and after the COVID-19 pandemic.

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METHODS

Data

This study analyzed cross-sectional employment data from the March-released Annual Social and Economic Supplement (ASEC) of the Current Population Survey (CPS).[10] Our data combined ASEC's March supplements from 2018 to 2022. Through a complex sampling design, this annual supplement surveys a nationally representative sample of adults to obtain person and household demographic, socioeconomic status, and employment information. We accessed harmonized ASEC CPS data from International Public Use Microdata Surveys (IPUMS).[10] Since the IPUMS database for ASEC CPS is appropriately de-identified and anonymity is ensured, in accordance with the definitions and institutional review board policy of the University of Iowa, we self-determined that this project was not human subjects research.

Sample

Within the integrated IPUMS-CPS data, we identified our sample of non-physician health care workers based on the following harmonized occupational codes: 3110, 3255; 3258; 3260; 3500; 3600; 3603; 3605; and 3645. This broad definition encompassed the following categories of workers: Physician assistants; Registered nurses; Nurse practitioners; Health diagnosing and treating nurse practitioners, all other; Licensed practical and licensed vocational nurses; Nursing, psychiatric, and home health aides; Nursing Assistants; Orderlies and Psychiatric Aides; and Medical assistants (Table 1). The analysis further restricted the sample to workers from these categories (hereinafter referred to as HCW) who were also considered labor force participants.

Table 1. Occupation Codes Used to Select the Analytical Sample and Corresponding Definition[10]

Occupation code	Health care worker category
3110	Physician assistants
3225	Registered nurses
3258	Nurse practitioners
3260	Health diagnosing and treating nurse practitioners, all other
3500	Licensed practical and licensed vocational nurses
3600	Nursing, psychiatric, and home health aides
3603	Nursing assistants
3605	Orderlies and psychiatric aides
3546	Medical assistants

Variables

Conditional on participating in the labor force, we derived our study's outcome of interest from CPS employment status to create a binary variable indicating if the respondent was currently unemployed or not working. The primary independent variables were a set of binary variables representing the years 2018, 2020, 2021, and 2022. We set 2019 as the base year for all analyses. The key exposure was the COVID-19 pandemic emergency, which began March 2020. We then used CPS race/ethnicity variables to create a categorical variable with 5 mutually exclusive groups: non-Hispanic White; non-Hispanic Black; Hispanic; non-Hispanic Native American or Alaska Native; and non-Hispanic Asian American or Pacific Islander.

Design and Statistical Analysis

To test whether the COVID-19 pandemic differentially impacted the proportion of unemployed HCW conditional on labor force participation, we constructed equation 1, which separately interacts each year indicator variable ($YEAR_t$) with respondent characteristic of interest ($GROUP_i$).

$$1)\ UNEMPLOYED_{it}=B'YEAR_t*GROUP_i$$

The B' estimated the interaction between each $YEAR_t$ and $GROUP_i$ to measure the change in unemployment from the base year for each $GROUP_i$. For each B, we conducted *t*-tests to test for differences in the change from 2019 (base year) unemployment to unemployment in 2020, 2021, and 2022, separately (α of 0.05). Next, we conducted pretrend *t*-tests to separately estimate if the racial/ethnic group had differential unemployment trends prior to the pandemic (α of 0.05). We then tested for differences in unemployment across all 5 racial/ethnic group categories, jointly, as a robust Wald test for all the years separately (including the pretrend test). For these joint tests, we used the Bonferroni method to adjust for multiple hypotheses (α of 0.01).

To estimate the change in proportion of unemployed HCW, all analyses were specified as a linear probability regression model. For valid inference, we estimated each model's standard errors as robust to heteroskedasticity. To ensure our analytical sample was nationally representative and accounted for CPS survey design, all analyses were adjusted by the CPS sampling weights. All analyses were conducted using Stata® 17 statistical software (StataCorp LLC).

RESULTS

The analytical sample of HCW in the labor force totaled 109,260 (Table 2). During this time frame (2018–2022), these HCW accounted for nearly 40% of the entire health care labor force. In 2019, the overall proportion of HCW

Table 2. Study Sample Statistics[a]

	NHW	NHB	HISP	NAAN	AAPI
Unemployment rate (2019)[b]	6.5	6.5	5.9	15.5	5.2
Total analytical sample (2018–2022)[c]	51,597	23,511	15,329	2263	5382

[a]The sample is restricted to health care workers defined as: Physician assistants; Registered nurses; Nurse practitioners; Health diagnosing and treating nurse practitioners, all other; Licensed practical and licensed vocational nurses; Nursing, psychiatric, and home health aides; Nursing Assistants; Orderlies and Psychiatric Aides; and Medical assistants.

[b]Overall proportion, adjusted for sampling design, of health care workers not working in 2019 (prepandemic year).

[c]Total, unweighted number of observations in the sample for each race/ethnic group.

AAPI, non-Hispanic Asian American or Pacific Islander; HISP, Hispanic; NAAN, non-Hispanic Native American or Alaska Native; NHB, non-Hispanic Black; NHW, non-Hispanic White.

not working ranged from 5.2% for those identifying as non-Hispanic Asian American or Pacific Islander to 15.5% for those identifying as non-Hispanic Native American or Alaska Native. Figure 1 visually depicts the trends in the proportion of being off work for each race/ethnic group.

In 2020, all racial/ethnic groups of HCW were more likely to be off work (Table 3). However, the change in being off work from baseline ranged considerably. The smallest change was observed for non-Hispanic White HCW (estimated change: 2.2 percentage points; P<0.001), while the highest was found in non-Hispanic Native HCW (estimated change: 6.5 percentage points; P<0.01). Evidence that the change in unemployment in 2020 significantly differed across race/ethnic groups (P<0.001) and that employment trends differed across all race/ethnicity groups prior to the pandemic (P=0.042) also was found. Compared to the trends for non-Hispanic White HCW, only among non-Hispanic Native HCW did we find evidence of statistically significant differences in prepandemic unemployment trends (P<0.01).

In 2021, all groups except non-Hispanic Asian American/Pacific Islander reported sustained levels in the proportion of not working. Our estimates ranged from a 2.0 and 2.6 percentage-point increase in the proportion of being off work for non-Hispanic White and Hispanic, respectively, to a 5.5 and 7.9 percentage-point increase for non-Hispanic Black and non-Hispanic Native (P<0.001). The joint-test suggested that, for 2021, the trend in unemployment from 2019 differed across all race/ethnic groups.

Finally, while the proportion of unemployed HCW appeared to have attenuated overall (joint-test insignificant at P=0.081), rates of being off work remained significantly higher than 2019 rates for non-Hispanic Black HCW (estimated change: 3.5% percentage points; P<0.01). All other estimates returned closer to 2019 levels.

DISCUSSION

Our study results suggest that the pandemic may have disproportionately reduced employment for non-physician HCW who self-identify as non-Hispanic Black or as Native American/Alaska Native. Relative to 2019 baseline unemployment rates, the change in 2020 for non-Hispanic Black HCW represents an 85% relative increase in unemployment. Unemployment rates for other racial/ethnic groups significantly increased from 2019 but returned to prepandemic levels by 2022. However, for non-Hispanic Black and Native HCW, the change was larger in 2021 than in 2020. As of 2022, the proportion of non-Hispanic Black HCW had yet to return to prepandemic levels, instead remaining 54% relatively higher than 2019 rates. We should reiterate that we identified associations, not necessarily causal effects. To accommodate an analysis for which other variables potentially associated with unemployment were adjusted, we could have tested for differential trends between non-Hispanic White populations and all other racial/ethnic populations grouped together. We felt that would be an inappropriate approach, given the non-homogeneity between racial groups, as well as experiences throughout the pandemic.

Findings provide more evidence that the burden of the COVID-19 pandemic disproportionately fell on BIPOC, who account for the majority of this study's sample workforce.[11] To date, research has found that the impacts of the pandemic on BIPOC nurses are complex and multifaceted.[12] BIPOC nurses experienced interpersonal and institutional racism before the pandemic, but these experiences may have increased since 2020.[12] Moreover, the disparate impact of adverse COVID-19 infections also weighed heavily on BIPOC nurses throughout the pandemic.[12] Other research has pointed to lack of support, specifically for mitigating the threat of COVID-19 to racially minoritized nurses and their families.[13] While

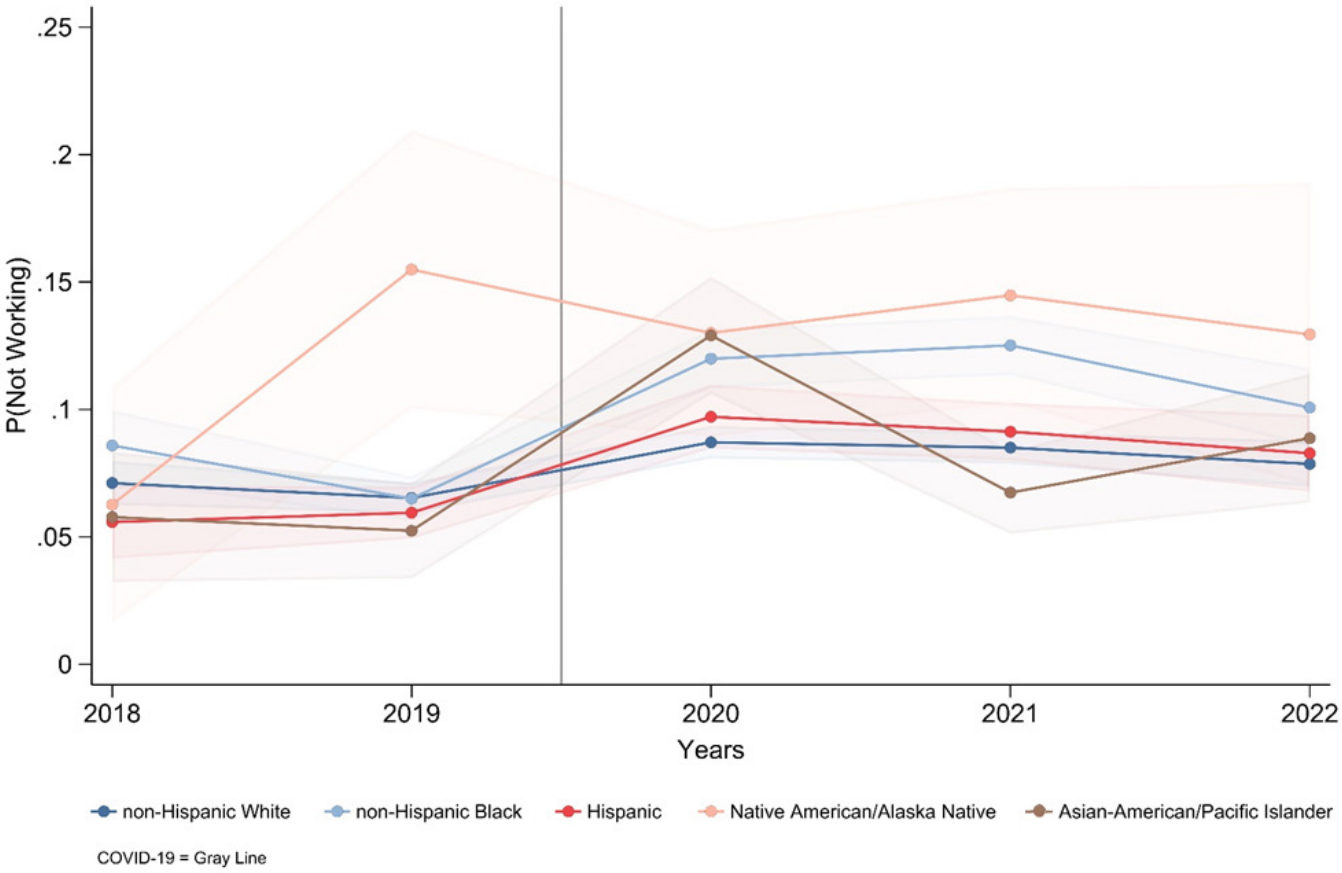

Figure 1. *Year-by-year trends in unemployment among non-physician health care workers (nurse practitioners, physician assistants, registered nurses, medical assistants, etc) by race/ethnicity.*

Table 3. Change (From 2019) in the Proportion of Unemployed Health Care Workers[d] by Race/Ethnicity

	2020[a]		2021[b]		2022	
Group	**Est.**	**SE**	**Est.**	**SE**	**Est.**	**SE**
NHW	0.022***	(0.004)	0.020***	(0.004)	0.013	(0.006)
NHB	0.055***	(0.007)	0.060***	(0.007)	0.035***	(0.008)
HISP	0.032***	(0.007)	0.026***	(0.006)	0.018	(0.008)
NAAN[c]	0.065**	(0.021)	0.079***	(0.022)	0.064*	(0.030)
AAPI	0.064***	(0.012)	0.002	(0.009)	0.023	(0.013)

Table 3 reports the estimates of the change in proportion of being unemployed or not working from baseline (2019) for 2020, 2021, and 2022. Estimates were adjusted for sampling weights. Robust standard errors reported in parentheses. These point estimates were used to test for joint differences in the change from baseline across all race/ethnic groups, adjusting for multiple hypotheses tests using Bonferroni method (P<0.01).

**P<0.05; **P<0.01; ***P<0.001.*

[a]*Change from baseline to 2020 were significantly different across groups.*

[b]*Change from baseline to 2021 were significantly different across groups.*

[c]*Prepandemic differential trend observed (P<0.01).*

[d]*Defined in this study sample as nurse practitioners, physician assistants, registered nurses, medical assistants, etc.*

AAPI, non-Hispanic Asian American or Pacific Islander; Est. estimated change; HISP, Hispanic; NAAN, non-Hispanic Native American or Alaska Native; NHB, non-Hispanic Black; NHW, non-Hispanic White; SE, standard error.

our study does not claim to have identified a causal link between differential unemployment rates among HCW and population health equity outcomes, we argue that the negative and sustained trend for BIPOC nurse practitioners, physician assistants, registered nurses, medical assistants, and other non-physician health care workers runs counter to the U.S. health care industry's oft-stated goals of achieving racial health equity. For whatever reason, be it interpersonal, institutional, or macrolevel racism, BIPOC HCW have yet to return to prepandemic employment rates. If health equity is the goal, then health equity initiatives, both within health systems and externally, are needed to respond to and mitigate the adverse impacts of the pandemic on BIPOC HCW.[14]

As more data become available, ongoing workforce surveillance could help policymakers and hospital administrators respond to dynamic workforce trends. Future research may be needed to evaluate how pandemic-induced employment changes impacted health care organizations and public health policies. Finally, research evaluating how to retain and sustain employment of racial minoritized HCW in the advanced practitioner realm remains warranted.

Limitations

This study is not without its limitations. First, we recognize the heterogeneity within each of the 5 racial/ethnic categories. Our ability to disaggregate by race/ethnicity was limited to the sample size and number of categories in the CPS dataset. The small sample size of each racial/ethnic group also limited our ability to further stratify analyses by geographic region, gender, or specific HCW category code. There could very well be heterogeneity in unemployment trends by these factors, but unfortunately our study was not suited to investigate them. Without such context, it is also difficult to determine the cause of changing unemployment or to differentiate between the COVID-19 pandemic's direct effects (ie, case and mortality rates) or indirect effects (closures, economic, etc).

There also are other factors that could be correlated to racial/ethnic differences in unemployment since 2018. Age, gender, income, family status, and job tenure could differentially impact decisions and opportunities among different racial/ethnic groups regarding leaving and returning to work during the pandemic. Moreover, contextual and geographic factors related to the pandemic, such as case and mortality rates, could also impact workforce outcomes.

Finally, state and local policies could impact workforce patterns (ie, sick leave, unionization). Our simple event-history study does not attempt to adjust for such variables. More importantly, it should be emphasized that the differences in unemployment trends by race should not interpreted as causal. Our modeling cannot account (or adjust) for the effect of structural racism,[15,16] which may be a significant contributor to observed results in relevant subpopulations. Future research should aim to investigate how racism may have impacted racial/ethnic differences in workforce patterns throughout the pandemic.

In summary, this study provides additional evidence that the burden of the COVID-19 pandemic disproportionately fell on Black, Indigenous and People of Color. Failing to understand and address the stagnating return to the workforce for racially minoritized health care workers, particularly the many comprising the nursing profession, could slow progress for rebounding from the pandemic and progress toward achieving health equity.

Patient-Friendly Recap

- The COVID-19 pandemic greatly impacted the U.S. health care workforce in 2020, though overall employment levels have largely rebounded.
- Using publicly available national data, authors quantitatively examined how the pandemic's impact on employment trends varied by self-defined racial/ethnic group.
- Unemployment among Black and Native American health care workers increased more than other groups in 2021, and workforce participation for the former has not yet returned to its prepandemic rate.
- Additional research should investigate how this workforce disruption might impact efforts targeted at improving health equity.

Author Contributions

Study design: Semprini. Data acquisition or analysis: Semprini. Manuscript drafting: Semprini. Critical revision: Semprini.

Conflicts of Interest

None.

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