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Pre-pandemic Mental Health and Well-being: Differences within the Healthcare Workforce and the Need for Targeted Resources

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Abstract

Background—Occupational stress and diminished well-being among healthcare workers were concerning even before the COVID-19 pandemic exacerbated existing stressors and created new challenges for this workforce. Research on the mental health of healthcare workers has focused on physicians and nurses, with less attention to other occupations.

Methods—To assess pre-COVID mental health and well-being among workers in multiple healthcare occupations, we used 2017–2019 data from the Behavioral Risk Factor Surveillance System (BRFSS).

Results—Across the healthcare workforce, insufficient sleep (41.0%) and diagnosed depression (18.9%) were the most common conditions reported. Counselors had the highest prevalence of diagnosed depression. Healthcare support workers had elevated prevalences for most adverse health conditions.

Conclusion—Ensuring a robust healthcare workforce necessitates identifying and implementing effective occupation-specific prevention, intervention, and mitigation strategies that address organizational and personal conditions adversely affecting mental health.

Keywords

mental health; well-being; healthcare workforce; healthcare support workers; counselors; depression; insufficient sleep; occupation; industry

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Introduction

Occupational stress and diminished levels of overall well-being among healthcare workers were issues of concern even prior to the coronavirus disease 2019 (COVID-19) pandemic, which exacerbated existing stressors and introduced new challenges to this workforce.[1,2] Mental health concerns that have been the focus of attention in this workforce include depression, anxiety, substance use disorders, post-traumatic stress disorder (PTSD), burnout, compassion fatigue, and suicide.

Healthcare workers have long faced a convergence of stressors that are less common in other types of work. These stressors include the emotional burden of dealing with individuals who are seriously ill or dying; witnessing traumatic events, which is associated with PTSD, particularly among first-responders;[3,4] secondary traumatic stress following exposure to traumatized patients, particularly in emergency rooms;[5,6] witnessing or being the target of workplace violence,[7] which can result in adverse physical, psychological, social, and emotional effects;[7–10] and workplace bullying.[10–12] The prevalence of these problems has been reported to be particularly pronounced in emergency and psychiatry departments within hospitals, in the home health setting, and in nursing care facilities.[7,9,13] Among the additional stressors for many healthcare workers are poor job design, management challenges, suboptimal safety climate/safety culture, high caseloads, the effects of shift work and long work hours, and exposure to pathogens.

Most research on mental health in the healthcare workforce has focused on physicians (including physicians in training) and nurses. Problems noted among physicians include depression, anxiety, substance use disorders, burnout, and suicide.[13–17] As with the general public, estimated prevalences of depression among healthcare workers vary depending on the case definition and characteristics of the measurement instrument (e.g., criteria met for depressive disorder versus presence of sub-clinical depressive symptoms; self-reported symptoms versus provider-diagnosed depression; current depressive symptomatology versus incidence in the last 12 months), as well as demographic characteristics of the respondents (e.g., variation by age).[14–16,18,19] Depression has also been reported among physicians in training; a systematic review noted estimates of the prevalence of depression or depressive symptoms among residents ranging from 21% to 43%, depending on the case ascertainment variables listed above,[16] while a prospective study found an increase in depression based on PHQ-9 scores from 3.9% prior to the internship year to more than 20% during each quarter of the internship.[20] As with depression, suicide risk appears to accelerate during the physician training period.[19] Beyond the training period, female physicians have been found to have higher rates of completed suicide, at 1.4–2.3 times the rate in the general population,[18] although a recently-published analysis suggests the overall suicide risk among physicians is not significantly different from that of the general population.[21] Identified risk factors for mental health issues among physicians are both individual and occupational, with the latter including the stress of patient interactions and expectations, easy access to medication, heavy workload, adverse work schedules, and problematic or limited social interaction in the workplace.[13]

A high prevalence of depression has been noted among registered nurses (RNs).[22] A survey of nurses employed by hospitals reported rates of depressive symptomatology of 18%, approximately twice that of the U.S. population, with job satisfaction, body mass index, number of health problems, mental well-being, and health-related productivity significantly associated with depression scores.[23] The prevalence of depression among RNs is reported to be highest among those who are young, female, or working in intensive care or psychiatric units.[22] Nurses appear to be at higher risk for suicide than both physicians and the general public.[24,25]

Mental health concerns in the healthcare workforce are not restricted to physicians and nurses. However, information about the prevalence of mental health problems among other healthcare occupations is more limited. Rates of depression, stress, and PTSD have been reported for emergency services personnel, but estimates vary widely.[26] The scant literature on healthcare support workers (e.g., patient care aides; occupational, physical, and dental aides; phlebotomists) has found that care and support workers have worse mental health than the general working population[27] and that patient care aides are more likely to report depression than nurses.[28] Female healthcare support workers have also been found to have elevated rates of suicide.[25] Janitors across all industries have a higher prevalence of depression than other workers.[29] Although ancillary healthcare workers such as housekeeping staff do not have direct patient care responsibilities, they frequently work in patient care areas.

Mental health is also a concern for social workers, counselors, psychologists, and others who are tasked with directly addressing the mental health needs of others.[30,31] Male human service workers have been found to have higher levels of antidepressant use than other workers at the same skill level.[32] Elevated suicide rates have been reported among male welfare support workers, social workers, and female welfare support workers.[33]

Although the pandemic has led to new mental health challenges for workers globally, healthcare workers have been particularly at risk due to increased emotional, physical, and organizational demands, as well as increased risk of infection with SARS-CoV-2, the virus that causes COVID-19. However, fully addressing the long-term mental health needs of this workforce also requires understanding the levels of baseline, pre-pandemic mental health issues. To assess baseline mental health and well-being among healthcare workers in different occupations, we examined 2017–2019 data from the Behavioral Risk Factor Surveillance System (BRFSS). While BRFSS does not include prevalence data on the full range of mental health conditions and is limited to self-reported conditions and diagnoses, it does sample from a wide range of healthcare (and other) industries and occupations.

To our knowledge, this is the first study to evaluate pre-pandemic mental health and well-being of the healthcare workforce using a broad definition of this workforce (healthcare industry workers who have patient care responsibilities or who work in patient care areas) and including low-wage healthcare workers. The purpose of this study was to identify segments of the healthcare workforce that had the highest pre-pandemic prevalences of selected adverse conditions related to mental health and well-being, as they might require additional services during and after the pandemic.

Methods

Study Population

The BRFSS is a national survey of the non-institutionalized U.S. adult population (18 years or older) administered by state and jurisdictional health departments.[34] Respondents are selected for the survey using random digit dialing techniques on both cellular phones and landlines. Overall response rates for this survey for landlines and cellphones, respectively, by year were 45.3% and 44.5% (2017); 53.3% and 43.4% (2018); and 53.5% and 45.9% (2019). Response rates overall and by state can be found at https://www.cdc.gov/brfss/data_documentation/index.htm.

In addition to a core survey, the BRFSS includes modules that states can opt to include. One of these modules is sponsored by the National Institute for Occupational Safety and Health (NIOSH) and collects the industry and occupation of respondents who are employed for wages, out of work for less than one year, or self-employed. Occupation and industry are collected through open-ended questions: "What kind of work do you do?" followed by "What kind of business or industry do you work in?" This module is not implemented by the same states each year. A total of 33 states included this module during at least one year between 2017–2019 (22 states in 2017, 30 in 2018, and 25 in 2019, with 17 states participating all three years). We used the three most recent years of pre-pandemic data to enhance reportability for smaller healthcare occupations.

During BRFSS survey years 2017–2019, 314,078 respondents reported they were employed or self-employed. A total of 51,895 (16.5%) respondents were excluded due to missing or uncodable industry or occupation; active-duty military status; or conflicting employment status information (respondents who reported being employed but whose responses to the industry or occupation question indicated they were unpaid workers, disabled, or retired). Industry and occupation free-text responses were autocoded to 2010 U.S. Census Bureau industry and occupation codes by the NIOSH Industry and Occupation Computerized Coding System (NIOCCS) or, for items that could not be coded automatically, by human coders using computer-assisted coding.[35]

Although we provide results for all healthcare industry workers combined (all organizationally and self-employed workers with census industry codes 7970–8270), the focus of this study was on workers who interact directly with patients, as well as those who work in patient care areas as part of their duties, such as janitors and maids. Non-healthcare workers (employed outside both healthcare industries and healthcare occupations) comprised the comparison group for this work. A third, smaller set of workers are employed in healthcare occupations but outside the healthcare industries (e.g. school nurses, dieticians employed in the sports industry); we excluded them from reporting. Within the healthcare industry, we present results for occupational groups that had reportable results (denominator size 50 and relative standard error for prevalence estimates 30%) for at least three of the six conditions of interest.

Measures

We calculated distributions of demographic characteristics for each healthcare occupation. We also calculated unadjusted and adjusted prevalences of six health conditions elicited in the survey (Table 1). Because well-being and physical and mental health are not independent,[36] in addition to conditions that explicitly concern mental health, we assessed prevalences of self-rated overall health, frequent physical distress, and insufficient sleep. Conditions evaluated were self-rated health (fair or poor general health); frequent physical distress (physical health not good at least 14 of past 30 days); frequent mental distress (mental health not good at least 14 of past 30 days); activity limitations (poor physical or mental health preventing usual activities for at least 14 of past 30 days); diagnosed depression; and insufficient sleep (<7 hours average sleep per 24-hour period; elicited only in 2018 BRFSS survey). Because responses for the items reported as number of days cluster at 0 and at multiples of 5 and 7, we did not treat them as continuous variables, instead dichotomizing them.

Analysis

To account for the complex survey design and incorporate respondent sampling weights in BRFSS, we used SAS version 9.4 (SAS Institute Inc., Cary, NC) and SAS-callable SUDAAN version 11.0 (RTI International, Research Triangle Park, NC). To estimate population counts and weighted unadjusted prevalences for all variables, we used the SURVEYFREQ procedure. We identified differences in health conditions by healthcare worker occupations or industries using the RLOGISTIC procedure. We compared healthcare workers to non-healthcare workers by performing logistic regressions and estimating adjusted prevalence ratios (aPRs) and their 95% confidence intervals (CIs). Non-healthcare workers served as the comparison group for the full group of healthcare workers, as well as for specific subgroups of healthcare workers. We considered CIs for aPRs that do not span the null to be statistically significant.

Adjustment variables in the primary regression models were sex; race/ethnicity combined (classified as white non-Hispanic, black non-Hispanic, other non-Hispanic, Hispanic); age in years (18–34, 35–54, >=55); and marital status (collapsed to married or part of an unmarried couple [as a proxy for level of social support] vs. all other). All estimates in this report were weighted. Because of the complex relations between income and demographics, occupation/industry, and health outcomes,[37,38] we did not adjust for household income.

Results

The 37,685 BRFSS respondents who worked in healthcare industries were the focus of the study (Table 2). Another 4,627 healthcare workers were employed in non-healthcare industries; results for this group are not further reported. The 219,871 non-healthcare workers comprised the comparison population. The largest subset of the 37,685 healthcare respondents were from the hospital industry (47%), followed by ambulatory care (29%), nursing care facilities (10%), home health (8%), dental offices (4%), and other healthcare industries (2%).

Demographics of healthcare workers by occupation

Demographic characteristics of respondents differed markedly by healthcare occupation. Although approximately 65% of healthcare diagnosing and treating practitioners were White, most healthcare support workers (55%) were non-White, primarily non-Hispanic African American or Hispanic (Table 3). Age distributions also varied by occupation. Educational attainment generally tracked with educational requirements for the occupation: 90% of health diagnosing practitioners and 64% of health treating practitioners had completed college, but only 28% of health technicians and technologists and 14% of healthcare support workers had done so. Income distribution and home ownership levels followed patterns similar to those observed for education.

Prevalence of adverse health conditions by healthcare occupation

Across the healthcare workforce, insufficient sleep and diagnosed depression were the most commonly reported issues, with prevalences of 41.0% and 18.9%, respectively (Table 4). For both conditions, healthcare workers had statistically significant elevated aPRs compared to the non-healthcare workers; prevalences among the latter were 36.5% for insufficient sleep and 14.2% for depression. Although healthcare workers had a higher prevalence of depression than non-healthcare workers (aPR 1.11, 95% CI 1.06–1.19), healthcare workers were slightly less likely to report frequent mental distress (aPR 0.88, 95% CI 0.81–0.94). Healthcare workers were also significantly less likely than non-healthcare workers to report poor self-rated health (aPR 0.76, 95% CI 0.70–0.83) and marginally less likely to report frequent physical distress (aPR 0.90, 0.81–1.00).

Workers in community and social service occupations had an elevated prevalence of diagnosed depression (compared to the prevalence observed in non-healthcare workers, the reference group for all comparisons), with an aPR of 1.65 (95% CI 1.32–2.05). This result was driven largely by counselors in the healthcare industry; this group had the highest unadjusted prevalence estimate (34.7%) for depression of all healthcare occupation groups reported, as well as an aPR above 2. Social workers had a small elevation for depression that did not attain statistical significance (aPR 1.14, 95% CI 0.87–1.50). Community and social service occupations workers were significantly less likely than non-healthcare workers to report poor self-rated health (aPR 0.70, 95% CI 0.52–0.95).

In the broad grouping of healthcare practitioners and technical occupations, only the prevalence of insufficient sleep was significantly elevated (aPR 1.16, 95% CI 1.07–1.25). Health diagnosing practitioners had lower prevalences than non-healthcare workers for every condition except insufficient sleep, and the only significantly elevated prevalence was for insufficient sleep among nurse practitioners (prevalence of insufficient sleep 58.7 [95% CI 36.4–78.7], aPR 1.58 [95% CI 1.11–2.26], results for other groups of health diagnosing practitioners not shown). Results for health treating practitioners were similar, with a significant elevation only for insufficient sleep (primarily among RNs). The prevalence of diagnosed depression among treating practitioners was higher than for diagnosing practitioners but was not significantly elevated compared to the prevalence among non-healthcare workers. Health technologists and technicians (and particularly licensed practical nurses/licensed vocational nurses), a group with somewhat lower wages

than health diagnosing and treating practitioners, had significant elevations of diagnosed depression.

Adverse health conditions were most common among the lowest-wage healthcare workers with patient care responsibilities. The healthcare support occupations grouping had statistically significant elevations of every condition except frequent physical distress. With the exception of insufficient sleep (which was most common among phlebotomists), these results are driven by the nursing, psychiatric, and home care aide occupation. The duties of nursing, psychiatric, and home health aides substantially overlap those of an occupation outside health support: the personal care aides and service occupation. Like healthcare aides, personal care aides had statistically significant elevations of almost every outcome: poor self-rated health; frequent mental distress; activity limitations; diagnosed depression; and insufficient sleep. For most of these outcomes, point estimates were higher than those for patient care aides. In addition, personal care aides had the highest unadjusted prevalence estimates among of frequent mental distress and activity limitations of any group assessed.

Ancillary support occupations (food preparation and serving, janitors, maids and housekeepers, trades) had elevated prevalences for some outcomes. Among these groups, the prevalence of poor self-rated health was at least four times the prevalence among healthcare diagnosing and treating practitioners. Both food preparation and serving workers and trades workers had statistically significant elevations of frequent physical distress and insufficient sleep.

Health conditions and behaviors by healthcare industry

Prevalences of adverse health conditions also differed by industry (Table 5). Workers in the home health industry had the highest prevalences of most adverse health conditions: poor self-reported health; frequent physical distress; activity limitations; and diagnosed depression. Moreover, aPRs comparing prevalences of these conditions among home health workers to prevalences in non-healthcare workers were statistically significant. Home health and nursing care facility workers had the highest prevalences of frequent mental distress. Hospital workers had significantly lower prevalences of poor self-rated health (aPR 0.62, 95% CI 0.54–0.71) and frequent physical (aPR 0.77, 95% CI 0.66–0.90) and mental distress (aPR 0.75, 95% CI 0.68–0.84) than non-healthcare workers but did have a statistically significant elevation for insufficient sleep (aPR 1.16, 95% CI 1.07–1.25).

Discussion

Although much of the research on adverse mental health conditions among healthcare workers has focused on physicians and nurses, our study assessed mental health and well-being among multiple healthcare industry workforces and found that healthcare support workers bore the greatest burden of these conditions before the COVID-19 pandemic. Among low-wage workers, patient and personal care aides were particularly at risk, with higher prevalences of adverse mental health conditions and poorer well-being compared to both other healthcare workers and the non-healthcare workforce. These findings by occupation were reflected in healthcare industry results: workers in the home health and nursing care facility industries, where the majority of patient and personal care aides work,

had higher prevalences of adverse health conditions than their counterparts in hospitals and ambulatory care settings.

Workforces with either a very high prevalence of a single condition or many conditions with significantly elevated aPRs can be considered to have high mental health burdens. By these metrics, the occupations with the highest burdens have workforces that are largely female (nursing, psychiatric, and home health aides; counselors; personal care aides), have relatively high percentages of non-Hispanic African American workers (nursing, psychiatric, and home health aides; counselors; food preparation and serving), have low educational attainment (nursing, psychiatric, and home health aides; patient and personal care aides; janitors; food preparation and serving; trades), and/or have low household incomes (nursing, psychiatric, and home health aides; patient and personal care aides; janitors; food preparation and serving). Many workforces with these demographic characteristics are disproportionately subject to multiple stressors, including discrimination and restricted occupational options.[39,40]

Previous literature has noted that self-reported health and the prevalence of mental health issues differ across demographic characteristics. Women report more mental health symptoms, both in general and in the workplace context,[18] and they report more physical health repercussions from burnout.[31] Socioeconomic status and race/ethnicity have been reported to affect self-rating of health in the general population, perhaps reflecting differing expectations[41] or experiences.[42] In an older study of mental health workers, non-White respondents reported lower levels of both emotional exhaustion and personal accomplishment, while higher education and salary were positively associated with both outcomes.[30] This observation may stem from different configurations of job demand and control, as well as other occupational and non-occupational stressors. Within the physician occupation, a recent study found no significant differences in prevalence of depressive symptoms by race/ethnicity.[43] Of interest is that our study did not observe significantly increased adverse health conditions for occupations with the highest prevalences of Hispanic workers. While Hispanic workers are disproportionately found in several low-wage healthcare occupations, they have a substantial presence in professional occupations (e.g. comprising 20% of dentists). Notably, the prevalence of depression in the general population is inversely related to income, with nearly 16% of adults with family income below the Federal Poverty Limit (FPL) reporting depression during the past two weeks, compared to 3.5% of adults from families with incomes at least four times the FPL.[44] All of the demographic and occupational findings in our study of mental health and well-being should be considered within the context of complex relations between discrimination, income, educational opportunities, and occupational opportunities, as well as reporting differences. While presentation of separate results by demographic group was beyond the scope of this scan of mental health outcomes by healthcare occupation, further research into demographic differences within specific occupations is warranted.

Mental health conditions among healthcare workers not only adversely affect the workers themselves and their families, they can also impact patient care.[45] A systematic review found that common mental disorders in nurses were strongly associated with multiple adverse work themes: general errors, medication errors, near misses, and decreased

patient safety and satisfaction.[46] Self-reported exhaustion due to long-term stress has been associated with poor job performance and absence due to illness among healthcare and social insurance workers.[47] Depression among physicians is also associated with lower quality medical care;[48] although research on the effects of depression on care quality among low-wage healthcare workers is lacking, there is little reason to believe results would differ. The elevated burden of adverse health conditions observed among home health and nursing care facility industries in the current study may be linked to observed high staff turnover in these industries.

Multiple groups of healthcare workers reported insufficient sleep. The prevalence of insufficient sleep was elevated in the healthcare industry as a whole and specifically in the hospital and nursing care facility home industries, and among workers in specific healthcare occupations: RNs, patient care aides, personal care aides, medical assistants, phlebotomists, food preparation and serving workers, and workers in the trades. Whether insufficient sleep primarily reflects long working hours, shift work, or is a function of insomnia (from physical or mental health conditions) or mental health issues or conditions (e.g., anxiety, depression) likely varies by individual, as well as industry and occupation, and could not be determined in this cross-sectional study. Among all industries, shift work has been associated with increased risk of adverse mental health outcomes, with results varying by sex and shift type.[49] Shift work is associated with insufficient sleep,[50] which in turn has been associated with increased odds of poor self-rated health,[51] burnout,[52] and depressive symptoms.[53] The mechanisms of relations between insufficient sleep and some adverse effects may be complex: one study found that while long working hours appear to be linked to depression in physicians, the association disappeared after stratification for an occupational stress metric.[54] However, the high prevalence of insufficient sleep across the healthcare workforce is concerning.

This study has a number of limitations. Foremost is that BRFSS questions related to mental health are not comprehensive. While depression and "poor mental health days" are included, the survey does not specifically assess other common conditions such as anxiety. In addition, the "diagnosed depression" variable provides no specific information on severity or duration and is a single summary metric, with none of the detail included in survey instruments designed to ascertain symptoms or severity of depression. All information in BRFSS is self-reported and subject to social desirability and recall bias, with the former likely to lead to underestimated prevalences of adverse health conditions. Of the basic demographic characteristics, income was omitted most frequently (11%) for our study population. The results for several of the adverse health conditions we evaluated could also be affected by the stigma associated with mental health issues (resulting in underreporting); the level of stigma may differ by demographic and occupational group. Finally, as the BRFSS industry and occupation module is optional and is not administered by every locality, these results are not nationally representative. Despite these limitations, the current findings are useful for identifying groups within the healthcare workforce in most need of resources and interventions to address adverse mental health issues.

Prevention of the upstream (including organizational and structural) factors leading to mental health issues among healthcare workers, along with subsequent assessment,

intervention, and treatment, is key. However, research on the efficacy of workplace mental health and well-being programs, practices, and policies (including those that are individually, group, and organizationally focused) has been characterized as sparse, methodologically weak, or failing to account adequately for differences in demographic or occupational groups.[30,31,55,56] The results of the current study highlight the need for understanding and improving working conditions that may impact healthcare workers' mental health and well-being. Research on interventions among healthcare support staff and other low-wage healthcare workers, groups with the highest prevalences of adverse outcomes in this study, has been particularly limited. Such research is particularly important in light of the finding in previous research that the suicide rate in female healthcare support workers is significantly higher than that of all female workers.[25]

Other barriers to addressing mental health issues include stigmatization of acknowledging and seeking help for mental health issues, as well as access to affordable care. Stigma has been noted particularly for physicians, who have concerns about the professional implications of accessing mental health care.[13] The need for specialized service providers who are aware of these concerns has been noted.[13,18] Incorporating education about mental illness into medical training is recommended.[48] Another barrier, access to affordable care, is most salient for lower-wage workers, such as patient and personal care aides; low-wage workers are more likely to lack health insurance and to be unable to afford healthcare visits.[27]

One potential approach to circumventing the stigma of seeking mental health assistance might be to focus on addressing burnout, a construct that is sometimes conflated with mental health concerns such as depression and anxiety. The nature of the relationship between burnout and mental health concerns is contested, with some research finding them indistinguishable[57] and other analyses suggesting that depression and anxiety are distinct from burnout[58] or that only specific characteristics of burnout are linked to depression[59] or anxiety.[60] Investigators have expressed concern that burnout is taken less seriously than the overlapping or coextensive diagnosis of depression.[57] However, the possibility that burnout may be less stigmatized and may thus present a more acceptable reason for seeking treatment should be explored. Unfortunately, interventions around burnout have limitations similar to those described for other mental health and well-being concerns. Public health and health delivery systems should strive to implement evidence-based programs that 1) meet the needs of specific workforces to support employee mental health and well-being, and 2) simultaneously address organizational impediments to the success of these programs through measures such as ensuring easy and affordable access, employee privacy, and supportive work cultures.

Conclusions

In these pre-pandemic survey data, elevated prevalences of the broadest range of mental health-related concerns were seen among low-wage healthcare workers. More recent work has documented the effects of both occupational and personal stressors associated with COVID-19 on a range of healthcare workers.[1,2,61,62] Among the general public, the prevalence of depression has increased markedly from pre-pandemic levels, particularly

for more severe depression,[63] although whether this increase will be sustained is unclear. Regardless, the current emotional support needs of the healthcare workforce are likely greater than those indicated by this study. At the same time, mental health treatment resources have been heavily strained by the pandemic and its repercussions and are not available to all who would benefit from them. Moreover, many lower-income healthcare workers, such as the healthcare support group observed in this study to have high prevalences of multiple adverse health conditions, may not have access to affordable mental health treatment. A concerted effort to develop, implement, and evaluate occupation- and industry-specific, culturally competent prevention, intervention, and mitigation strategies addressing both organizational and personal conditions that lead to mental health issues is critical to ensuring a robust healthcare workforce.

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Table 1.

BRFSS Survey Questions Related to Mental Health and Well-being, 2017–2019

Metric title	BRFSS question	Cutpoint
Poor self-rated health	Would you say that in general your health is: excellent, very good, good, fair or poor?"	Fair or poor = poor self-rated health
Frequent physical distress	Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?	>=14 days = yes
Frequent mental distress	Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?	>=14 days = yes
Activity limitations	During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?	>=14 days = yes
Diagnosed depression	Has a doctor, nurse, or other health professional ever told you that you had a depressive disorder (including depression, major depression, dysthymia, or minor depression)?	N/A
Insufficient sleep[*]	On average, how many hours of sleep do you get in a 24-hour period?	< 7 hours average per 24-hour period

[*]Elicited only in 2018

Table 2.

Distribution of workers from healthcare occupations across healthcare industries, BRFSS 2017–2019

	2010 Census occupation codes	Sample Size	Weighted N (*1,000)	Dental Office (Census 7980) (%)[a]	Home Health (Census 8170) (%)[a]	Healthcare Industry (U.S. Census industry codes) Ambulatory Care (Census 7970, 7990, 8070–8090) (%)[a]	Hospitals (Census 8190) (%)[a]	Nursing Care Facilities (Census 8270) (%)[a]	Other (Census 8180) (%)[a]
Non-healthcare workers[b]		219,871	74,862						
Healthcare workers in non-healthcare industries[d]		4,627	1,330						
Healthcare industry workers[d]		37,685	12,051	3.7	8.4	29.4	46.5	10.1	1.9
Healthcare occupation grouping[e]									
Community & social service occupations	2000–2060	1,288	317	NR	2.8	55.6	34.5	5.9	NR
Counselors	2000	516	142	0.0	NR	77.9	17.7	NR	NR
Social workers	2010	554	125	0.0	4.1	46.3	40.5	8.9	NR
Healthcare practitioners & technical occupations	3000–3540	18,598	5,646	3.5	4.5	26.6	55.8	6.9	2.8
Health diagnosing practitioners	f	4,100	1,235	6.9	1.1	52.2	37.9	1.5	NR
Physicians & surgeons	3060	2,445	758	NR	NR	58.1	40.6	NR	NR
Health treating practitioners	g	10,737	3,126	NR	6.5	20.4	63.7	9.2	NR
Physical therapists	3160	529	152	0.0	10.5	52.7	26.8	10.0	0.0
Registered nurses	3255	8,959	2,626	NR	6.8	17.1	66.6	9.4	NR
Miscellaneous health technologists & technicians	3300–3535	3,679	1,257	8.6	2.9	16.2	53.7	6.7	11.9
Clinical laboratory technologists & technicians	3300	600	192	0.0	NR	8.4	68.0	NR	18.7
Health practitioner support technologists & technicians	3420	325	119	NR	NR	11.1	86.7	NR	NR
Licensed practical & licensed vocational nurses	3500	788	251	0.0	13.6	23.0	36.0	27.5	0.0

	2010 Census occupation codes	Sample Size	Weighted N (*1,000)	Dental Office (Census 7980) (%)[a]	Home Health (Census 8170) (%)[a]	Healthcare Industry (U.S. Census industry codes) Ambulatory Care (Census 7970, 7990, 8070–8090) (%)[a]	Hospitals (Census 8190) (%)[a]	Nursing Care Facilities (Census 8270) (%)[a]	Other (Census 8180) (%)[a]
Miscellaneous health technologists & technicians, other	3535	403	132	NR	NR	36.2	59.7	NR	NR
Healthcare support occupations	3600–3655	5,313	1,931	7.2	20.7	22.2	24.2	25.0	0.7
Nursing, psychiatric, & home health aides	3600	3,436	1,223	0.0	31.6	7.5	24.3	36.6	NR
Dental assistants	3640	385	144	95.8	0.0	NR	NR	0.0	0.0
Medical assistants	3645	823	356	NR	NR	74.8	23.2	NR	NR
Phlebotomists	3649	154	54	0.0	0.0	NR	63.4	0.0	19.5
Food preparation & serving	4000–4160	470	117	0.0	NR	6.6	50.7	41.4	0.0
Building & grounds cleaning & maintenance occupations	4200–4250	777	262	NR	NR	16.3	60.3	21.1	NR
Janitors & building cleaners	4220	393	143	NR	NR	26.1	58.8	NR	NR
Maids & housekeeping cleaners	4230	338	109	0.0	NR	NR	62.6	31.3	0.0
Personal care & service occupations	4300–4650	1,336	476	NR	58.5	12.0	14.4	14.9	NR
Personal care aides	4610	1,156	432	NR	63.6	11.0	13.7	11.5	NR
Office & administrative support occupations	5000–5940	3,731	1,280	5.5	2.1	43.4	44.1	3.7	1.2
Trades[h]	6200–9750	679	225	NR	NR	24.2	50.5	10.1	7.3

NR = Not reported because relative standard error of estimates is >30%.

Heavier shading indicates broader occupational grouping.

[a] Weighted

[b] Respondents with census industry codes 0170–7890 and 8290–9500 and census occupation not in (3000–3655)

[c] Respondents with census industry codes 0170–7890 or 8290–9500 and census occupation in (3000–3655)

[d] Respondents with census industry codes 7970–8270

[e] Within healthcare industry, includes healthcare occupational groups with at least three reportable mental health related outcomes (see Table 3)

[f] 3000, 3010, 3040, 3050, 3060, 3110, 3120, 3140, 3230, 3250, 3258

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[g]3030, 3150, 3160, 3200, 3210, 3220, 3235, 3245, 3255, 3256, 3257, 3260

[h]Construction, extraction, maintenance, production, & transportation & materials moving industries

Table 3.

Demographic characteristics (percentages[a]) of healthcare workers by occupation, BRFSS 2017–2019

	Age			Sex		Race/Ethnicity				Educational Attainment			Household Income			
	18–34	35–54	55+	Male	Female	Non-Hispanic white	Non-Hispanic African American	Non-Hispanic other	Hispanic	High school or less	Some college/ technical school	College graduate or more	<$35k	$35-<$50	$50k-<$75k	$75k
Non-healthcare industries[b]	32.3	43.3	24.4	59.5	40.5	60.8	10.8	8.4	19.9	38.6	29.8	31.6	26.6	12.4	15.8	45.2
Healthcare industry workers[c]	29.0	45.8	25.2	25.0	75.0	60.3	16.2	11.6	11.9	19.3	34.9	45.8	20.1	11.0	16.8	52.1
Healthcare occupation grouping[d]																
Community & social service occupations	26.2	50.0	23.8	24.8	75.2	63.4	25.8	4.0	6.8	5.9	17.6	76.5	14.0	12.9	19.7	53.4
Counselors	24.8	53.1	22.1	31.3	68.7	58.8	29.9	NR	NR	5.1	19.9	75.0	18.5	14.5	21.6	45.4
Social workers	29.7	45.6	24.6	14.7	85.3	69.5	21.1	NR	4.7	NR	10.2	83.8	8.5	11.7	15.5	64.3
Healthcare practitioners & technical occupations	26.2	49.1	24.7	24.5	75.5	66.2	12.4	12.9	8.4	6.5	32.0	61.6	7.4	8.2	16.8	67.6
Health diagnosing practitioners	17.6	52.8	29.6	47.3	52.7	64.1	6.8	21.6	7.5	3.4	6.3	90.3	3.2	3.3	5.2	88.3
Physicians & surgeons	14.6	52.9	32.4	56.2	43.8	62.4	6.0	25.1	6.4	3.2	6.2	90.6	3.9	2.8	4.0	89.3
Health treating practitioners	26.8	48.8	24.4	13.0	87.0	66.6	14.0	10.8	8.7	4.2	32.1	63.7	5.8	7.5	18.6	68.1
Physical therapists	25.4	54.0	20.6	23.8	76.2	77.8	NR	NR	NR	NR	12.7	86.2	NR	NR	12.5	83.6
Registered nurses	26.8	48.2	25.0	11.6	88.4	65.9	14.9	10.6	8.6	4.5	34.2	61.2	5.6	7.7	18.6	68.1
Misc. health technologists & Technicians	32.7	46.6	20.8	30.2	69.8	67.3	14.0	9.8	8.8	15.2	56.9	28.0	14.9	14.7	23.8	46.5
Clinical laboratory technologists & technicians	40.3	36.4	23.3	28.4	71.6	71.5	12.1	9.9	NR	NR	43.7	40.1	NR	12.1	26.0	39.1

	Age			Sex		Race/Ethnicity				Educational Attainment			Household Income			
	18–34	35–54	55+	Male	Female	Non-Hispanic white	Non-Hispanic African American	Non-Hispanic other	Hispanic	High school or less	Some college/technical school	College graduate or more	<$35k	$35–<$50	$50k–<$75k	$75k
Health practitioner support technologists & technicians	42.0	43.1	NR	35.9	64.1	60.1	25.4	NR	NR	17.4	61.9	20.7	15.9	22.1	31.4	30.5
Licensed Practical Nurses/LVNs	25.3	53.7	20.9	11.3	88.7	55.6	25.3	NR	NR	NR	66.9	20.5	15.3	23.6	28.6	32.6
Miscellaneous health technologists & technicians, other	27.9	50.8	21.3	41.1	58.9	56.1	14.4	NR	6.1	20.7	41.7	37.6	19.0	15.4	22.4	43.2
Healthcare support occupations	41.8	37.7	20.5	12.0	88.0	44.9	27.1	10.7	17.3	40.2	45.9	13.9	51.8	16.8	15.0	16.4
Nursing, psychiatric, & home health aides	39.4	36.1	24.4	11.8	88.2	39.5	33.8	11.7	14.9	51.3	38.0	10.7	60.1	16.1	12.1	11.6
Dental assistants	47.1	38.9	14.1	NR	97.1	54.3	NR	NR	32.1	31.1	57.4	11.5	32.2	12.7	21.8	33.4
Medical assistants	47.0	44.1	9.0	8.9	91.1	48.4	19.4	9.2	23.0	16.3	63.2	20.5	42.4	19.8	17.9	19.8
Phlebotomists	51.0	35.7	13.3	NR	83.4	48.7	26.7	NR	19.4	20.8	59.3	19.9	43.5	28.2	NR	NR
Food preparation & serving	31.9	40.6	27.5	36.6	63.4	48.0	27.7	3.5	20.8	67.4	27.3	5.3	56.5	14.8	15.7	NR
Building & grounds cleaning & maintenance occupations	31.7	42.9	25.4	46.1	53.9	45.2	24.3	NR	20.2	74.0	20.4	5.6	60.8	14.3	14.0	NR
Janitors & building cleaners	33.4	43.1	23.5	63.7	36.3	54.9	20.7	NR	19.6	66.4	27.0	NR	49.8	19.5	NR	NR
Maids & housekeeping cleaners	31.3	42.8	25.9	22.2	77.8	31.5	28.5	NR	22.1	84.6	11.8	NR	78.4	NR	NR	NR
Personal care & service Occupations	33.2	41.7	25.2	18.4	81.6	45.4	20.6	11.5	22.6	47.2	38.3	14.5	63.4	15.0	11.5	10.1
Personal care aides	34.4	42.0	23.6	18.3	81.7	43.3	20.8	12.1	23.8	49.4	37.1	13.6	66.8	13.1	11.6	8.5
Office & administrative	31.2	41.9	26.9	13.2	86.8	59.6	16.3	8.4	15.7	25.5	51.2	23.3	24.4	16.3	23.8	35.5

	Age			Sex		Race/Ethnicity				Educational Attainment			Household Income			
	18–34	35–54	55+	Male	Female	Non-Hispanic white	Non-Hispanic African American	Non-Hispanic other	Hispanic	High school or less	Some college/technical school	College graduate or more	<$35k	$35–<$50	$50k–<$75k	$75k
support occupations																
Trades [e]	32.3	33.9	33.8	75.4	24.6	58.7	11.0	NR	24.6	49.3	33.0	17.7	26.2	17.9	20.9	35.0

NR = Not reported because relative standard error of estimates is >30%.

LVN = licensed vocational nurse

Heavier shading indicates broader occupational grouping.

[a] Weighted

[b] Respondents with census industry codes 0170–7890 or 8290–9500 and census occupation not in (3000–3655)

[c] Respondents with census industry codes 7970–8270

[d] Within healthcare industry, includes healthcare occupational groups with at least three reportable mental health related outcomes (see Table 4)

[e] Construction, extraction, maintenance, production, & transportation & materials moving industries

Table 4.

Health-related metrics by healthcare occupation: unadjusted prevalences and adjusted prevalence ratios[a], BRFSS 2017–2019

	Fair or poor self-rated health	Frequent physical distress	Frequent mental distress	Activity limitations	Diagnosed depression	Insufficient sleep[b]
	% (95% CI)	% (95% CI)	% (95% IC)	% (95% CI)	% (95% CI)	% (95% CI)
	aPR (95% CI)	aPR (95% CI)	aPR (95% CI)	aPR (95% CI)	aPR (95% CI)	aPR (95% CI)
Non-healthcare workers[c]	11.9 (11.6, 12.3)	6.7 (6.5, 6.9)	10.1 (9.8, 10.4)	3.8 (3.6, 4.0)	14.2 (13.9, 14.6)	36.5 (35.7, 37.3)
	ref	ref	ref	ref	ref	Ref
Healthcare industry workers[d]	8.6 (8.0, 9.3)	6.3 (5.8, 7.0)	9.8 (9.1, 10.4)	3.7 (3.2, 4.2)	18.9 (18.0, 19.8)	41.0 (39.0, 43.1)
	0.76 (0.70, 0.83)	0.90 (0.81, 1.00)	0.88 (0.81, 0.94)	0.91 (0.79, 1.06)	1.11 (1.06, 1.18)	1.13 (1.07–1.19)
Healthcare Occupation Grouping[e]						
Community & social service occupations	7.4 (5.3, 10.0)	5.7 (3.8, 8.2)	10.1 (6.6, 14.5)	4.8 (2.6, 8.1)	27.3 (21.9, 33.1)	36.5 (27.7, 46.0)
	0.70 (0.52, 0.95)	0.84 (0.58, 1.22)	0.93 (0.63, 1.37)	1.27 (0.74–2.16)	1.65 (1.32, 2.05)	1.03 (0.81–1.30)
Counselors	9.1 (5.3, 14.2)	7.0 (3.7, 11.9)	NR	NR	34.7 (25.3, 45.1)	42.7 (27.3, 59.1)
	0.83 (0.53, 1.31)	1.04 (0.60–1.80)			2.21 (1.62, 3.02)	1.18 (0.83–1.68)
Social workers	6.1 (3.7, 9.5)	5.1 (2.6, 8.9)	9.1 (5.4, 14.2)	NR	20.5 (15.6, 26.2)	32.0 (19.9, 46.1)
	0.62 (0.40, 0.96)	0.77 (0.43–1.36)	0.81 (0.51, 1.30)		1.14 (0.87, 1.50)	0.94 (0.65–1.37)
Healthcare practitioners & technical occupations	5.1 (4.5, 5.8)	5.1 (4.3, 6.1)	7.7 (6.9, 8.6)	2.5 (2.0, 3.1)	17.9 (16.6, 19.2)	41.5 (38.4, 44.7)
	0.49 (0.43, 0.56)	0.75 (0.64, 0.89)	0.72 (0.64, 0.81)	0.64 (0.51, 0.80)	1.05 (0.98, 1.14)	1.16 (1.07–1.25)
Health diagnosing practitioners	3.3 (2.3, 4.5)	2.5 (1.7, 3.5)	5.0 (3.8, 6.5)	1.4 (0.8, 2.4)	12.6 (10.7, 14.6)	35.1 (29.0, 41.7)
	0.33 (0.24, 0.45)	0.38 (0.27, 0.54)	0.57 (0.44, 0.75)	0.40 (0.24–0.68)	0.91 (0.79, 1.05)	0.99 (0.83–1.17)
Physicians & surgeons	3.5 (2.4, 5.0)	2.5 (1.7, 3.5)	5.0 (3.4, 7.0)	1.5 (0.8, 2.7)	13.6 (10.9, 16.5)	32.5 (25.5, 40.1)
	0.35 (0.25, 0.50)	0.38 (0.22, 0.54)	0.61 (0.43, 0.86)	0.45 (0.26–0.79)	1.07 (0.89, 1.29)	0.92 (0.74–1.14)
Health treating practitioners	5.0 (4.1, 5.9)	5.2 (4.1, 6.5)	8.1 (6.9, 9.4)	2.8 (2.0, 3.8)	18.6 (17.0, 20.4)	44.5 (40.4, 48.7)
	0.48 (0.40, 0.57)	0.74 (0.59, 0.94)	0.72 (0.61, 0.84)	0.71 (0.52, 0.98)	1.03 (0.93, 1.13)	1.25 (1.14–1.37)
Physical therapists	NR	NR	2.6 (1.4, 4.4)	NR	12.0 (6.8, 19.2)	24.3 (14.6, 36.4)
			0.24 (0.14, 0.41)		0.68 (0.42, 1.10)	0.72 (0.47–1.10)
Registered nurses	5.1 (4.2, 6.1)	5.3 (4.1, 6.7)	8.4 (7.0, 10.0)	3.1 (2.2, 4.3)	18.6 (16.9, 20.4)	46.6 (42.0, 51.2)
	0.49 (0.41, 0.59)	0.75 (0.59, 0.97)	0.75 (0.63, 0.89)	0.78 (0.56, 1.09)	1.02 (0.93, 1.13)	1.31 (1.19–1.44)
Miscellaneous health technologists & technicians	7.3 (5.7, 9.1)	7.7 (5.6, 10.3)	9.5 (7.8, 11.4)	2.7 (1.8, 3.8)	21.3 (17.9, 25.0)	41.8 (34.1, 49.7)
	0.70 (0.56, 0.87)	1.16 (0.86, 1.55)	0.84 (0.69, 1.02)	0.67 (0.47, 0.97)	1.24 (1.04, 1.48)	1.15 (0.96–1.38)

	Fair or poor self-rated health	Frequent physical distress	Frequent mental distress	Activity limitations	Diagnosed depression	Insufficient sleep [b]
	% (95% CI)	% (95% CI)	% (95% IC)	% (95% CI)	% (95% CI)	% (95% CI)
	aPR (95% CI)	aPR (95% CI)	aPR (95% CI)	aPR (95% CI)	aPR (95% CI)	aPR (95% CI)
Clinical laboratory technologists & technicians	NR	NR	9.8 (5.6, 15.8)	NR	16.7 (8.9, 27.5)	48.9 (21.8, 76.4)
			0.81 (0.48, 1.37)		0.90 (0.51, 1.59)	1.34 (0.76, 2.35)
Health practitioner support technologists & technicians	NR	NR	14.5 (8.4, 22.8)	NR	29.7 (18.5, 42.9)	51.5 (30.7, 71.9)
			1.20 (0.76, 1.90)		1.77 (1.14, 2.76)	1.40 (0.95, 2.07)
Licensed practical & licensed vocational nurses	7.5 (4.1, 12.3)	NR	9.0 (5.7, 13.3)	NR	23.6 (17.5, 30.6)	43.3 (30.8, 56.4)
	0.67 (0.40–1.12)		0.76 (0.50, 1.15)		1.32 (1.01, 1.71)	1.15 (0.86–1.55)
Miscellaneous health technologists & technicians (other)	9.4 (5.2, 15.2)	12.9 (6.6, 22.0)	14.1 (7.9, 22.5)	NR	18.9 (9.5, 32.0)	34.5 (19.1, 52.8)
	0.92 (0.51, 1.47)	2.01 (1.17–3.44)	1.44 (0.89–2.34)		1.29 (0.73–2.28)	0.93 (0.57–1.51)
Healthcare support occupations	14.5 (12.6, 16.5)	8.3 (6.8, 9.9)	15.6 (13.6, 17.7)	6.5 (5.1, 8.2)	21.5 (19.3, 23.8)	46.5 (42.0, 51.0)
	1.17 (1.02, 1.34)	1.14 (0.94, 1.38)	1.18 (1.02, 1.35)	1.46 (1.14, 1.86)	1.16 (1.04, 1.29)	1.22 (1.10–1.35)
Nursing, psychiatric, & home health aides	16.8 (14.3, 19.5)	9.4 (7.4, 11.7)	16.8 (14.1, 19.8)	7.3 (5.4, 9.7)	22.0 (19.1, 25.1)	47.7 (41.8, 53.6)
	1.31 (1.12, 1.54)	1.26 (1.00, 1.59)	1.29 (1.09, 1.53)	1.62 (1.20, 2.18)	1.22 (1.06, 1.40)	1.22 (1.07–1.40)
Dental assistants	NR	NR	13.3 (7.7, 20.9)	NR	20.5 (13.7, 28.8)	33.9 (18.3, 52.6)
			0.97 (0.59, 1.59)		0.99 (0.68, 1.43)	0.97 (0.61–1.54)
Medical assistants	10.8 (7.2, 15.4)	6.7 (4.2, 10.1)	14.9 (11.2, 19.2)	5.3 (3.0, 8.6)	21.1 (16.7, 26.2)	51.1 (41.0, 61.2)
	0.90 (0.63–1.30)	0.98 (0.65, 1.47)	1.08 (0.82, 1.44)	1.21 (0.73, 2.01)	1.08 (0.86, 1.36)	1.40 (1.15–1.71)
Phlebotomists	18.1 (9.1, 30.6)	NR	10.3 (5.3, 17.6)	NR	26.9 (16.5, 39.5)	56.2 (37.8, 73.4)
	1.52 (0.86–2.70)		0.73 (0.42–1.29)		1.44 (0.93, 2.23)	1.44 (1.02–2.04)
Food preparation & serving	18.8 (12.4, 26.7)	12.7 (7.7, 19.4)	11.7 (7.6, 17.0)	NR	16.2 (11.3, 22.1)	53.4 (39.0, 67.4)
	1.43 (0.97, 2.11)	1.72 (1.11, 2.66)	0.99 (0.67, 1.47)		0.98 (0.69, 1.39)	1.37 (1.03–1.82)
Building & grounds cleaning & maintenance occupations	22.1 (14.4, 31.6)	9.9 (5.4, 16.2)	10.1 (6.2, 15.3)	NR	14.3 (9.7, 20.1)	36.5 (23.8, 50.6)
	1.70 (1.13, 2.55)	1.38 (0.82, 2.31)	0.94 (0.62, 1.44)		0.99 (0.69, 1.39)	0.96 (0.67–1.38)
Janitors & building cleaners	23.5 (11.5, 39.7)	NR	NR	NR	11.1 (5.8, 18.7)	29.2 (14.1, 48.8)
	1.84 (0.99–3.41)				0.80 (0.48–1.34)	0.75 (0.43–1.33)
Maids & housekeeping cleaners	20.8 (12.6, 31.1)	NR	10.6 (5.9, 17.3)	NR	18.5 (10.7, 28.8)	47.5 (29.7, 65.8)
	1.55 (0.98, 2.46)		0.96 (0.58, 1.59)		1.21 (0.75, 1.93)	1.28 (0.87–1.88)
Personal care & service occupations	22.7 (16.5, 30.0)	10.0 (6.1, 15.4)	18.2 (13.8, 23.3)	7.5 (4.3, 12.1)	30.8 (24.9, 37.2)	47.7 (37.0, 58.7)
	1.53 (1.22, 1.98)	1.35 (0.88, 2.07)	1.57 (1.23, 2.01)	1.73 (1.06, 2.82)	1.87 (1.55, 2.25)	1.35 (1.11–1.65)
Personal care aides	22.6 (16.0, 30.5)	10.0 (5.8, 15.9)	18.6 (13.8, 24.3)	7.8 (4.3, 12.9)	32.3 (25.8, 39.3)	48.6 (37.2, 60.1)

	Fair or poor self-rated health	Frequent physical distress	Frequent mental distress	Activity limitations	Diagnosed depression	Insufficient sleep [b]
	% (95% CI)	% (95% CI)	% (95% IC)	% (95% CI)	% (95% CI)	% (95% CI)
	aPR (95% CI)	aPR (95% CI)	aPR (95% CI)	aPR (95% CI)	aPR (95% CI)	aPR (95% CI)
	1.48 (1.16, 1.89)	*1.35 (0.85, 2.15)*	*1.60 (1.23, 2.08)*	*1.80 (1.08, 3.00)*	*1.96 (1.62, 2.38)*	*1.39 (1.13–1.70)*
Office & administrative support occupations	9.2 (7.2, 11.5)	5.5 (3.9, 7.4)	9.9 (7.9, 12.2)	3.6 (2.2, 5.4)	20.9 (17.9, 24.2)	31.6 (26.0, 37.6)
	0.76 (0.61, 0.94)	0.69 (0.51, 0.93)	0.84 (0.68, 1.04)	0.74 (0.49, 1.12)	1.13 (0.97, 1.33)	0.87 (0.72–1.05)
Trades [f]	15.8 (10.0, 23.3)	14.3 (8.8, 21.5)	9.7 (5.3, 15.9)	5.2 (2.9, 8.6)	10.8 (6.6, 16.4)	51.1 (38.2, 63.9)
	1.24 (0.86, 1.79)	*2.00 (1.30, 3.05)*	*1.05 (0.63, 1.74)*	*1.43 (0.87–2.35)*	*0.89 (0.58, 1.35)*	*1.40 (1.10–1.78)*

CI = Confidence Interval

Ref = reference group

NR = Not reported because relative standard error of estimates is >30%.

aPR = Adjusted prevalence ratio

Italics indicate statistically significantly elevated adjusted prevalence ratio.

Heavier shading indicates broader occupational grouping.

[a] Adjusted prevalences given for non-healthcare workers. For each healthcare occupation, the unadjusted prevalence is given for each condition, followed by the adjusted prevalence ratio comparing adjusted prevalence in that occupation to the adjusted prevalence for non-healthcare workers. Results are adjusted for age (18–34, 35–54, >=55), sex (male, female) and race/ethnicity (non-Hispanic White, non-Hispanic African American, non-Hispanic other, Hispanic).

[b] Elicited only in 2018 BRFSS questionnaire.

[c] Respondents with census industry codes 0170–7890 or 8290–9500 and census occupation not in (3000–3655)

[d] Respondents with census industry codes 7970–8270

[e] Within healthcare industry, includes healthcare occupational groups with at least three reportable mental health related outcomes

[f] Construction, extraction, maintenance, production, & transportation & materials moving industries

Table 5.

Health-related metrics for healthcare workers by industry: prevalences and adjusted prevalence ratios[a], BRFSS 2017–2019

	Fair or poor self-rated health		Frequent physical distress		Frequent mental distress		Activity limitations		Diagnosed depression		Insufficient sleep[b]	
	% (95% CI)	aPR (95% CI)	% (95% CI)	aPR (95% CI)	% (95% CI)	aPR (95% CI)	% (95% CI)	aPR (95% CI)	% (95% CI)	aPR (95% CI)	% (95% CI)	aPR (95% CI)
Non-Healthcare workers[c]	11.9 (11.6, 12.3)	ref	6.7 (6.5, 6.9)	ref	10.1 (9.8, 10.4)	ref	3.8 (3.6, 4.0)	ref	14.2 (13.9, 14.6)	ref	36.5 (35.7, 37.3)	ref
Healthcare industry workers[d]	8.6 (8.0, 9.3)	0.76 (0.70, 0.83)	6.3 (5.8, 7.0)	0.90 (0.81, 1.00)	9.8 (9.1, 10.4)	0.88 (0.81, 0.94)	3.7 (3.2, 4.2)	0.91 (0.79, 1.06)	18.9 (18.0, 19.8)	1.11 (1.06, 1.18)	41.0 (39.0, 43.1)	1.13 (1.07–1.19)
Industry group (U.S. Census industry codes)												
Dental office (7980)	5.5 (3.4, 8.4)	0.5 (0.34–0.78)	NR		8.5 (6.0, 11.7)	0.74 (0.53–1.03)	2.9 (1.5, 5.1)	0.75 (0.42–1.32)	12.5 (9.7, 15.9)	0.67 (0.53–0.86)	28.6 (20.9, 37.3)	0.84 (0.64–1.09)
Home health (8170)	20.2 (16.6, 24.2)	1.45 (1.23–1.72)	12.5 (9.6, 15.8)	1.62 (1.27–2.07)	15.9 (13.0, 19.1)	1.38 (1.15–1.65)	7.9 (5.5, 10.8)	1.80 (1.29–2.51)	26.3 (22.9, 30.0)	1.56 (1.36–1.78)	42.1 (35.2, 49.2)	1.15 (0.98–1.35)
Other ambulatory healthcare settings (7970, 7990, 8070–8090)	6.7 (5.7, 7.8)	0.62 (0.53–0.72)	5.9 (4.9, 7.0)	0.84 (0.70–1.00)	9.0 (7.9, 10.3)	0.85 (0.74–0.97)	3.3 (2.5, 4.2)	0.81 (0.62–1.05)	19.6 (18.0, 21.3)	1.17 (1.07–1.28)	38.4 (34.8, 42.0)	1.07 (0.98–1.18)
Hospital (8190)	6.8 (5.9, 7.7)	0.62 (0.54–0.71)	5.3 (4.6, 6.2)	0.77 (0.66–0.90)	8.3 (7.5, 9.2)	0.75 (0.68–0.84)	3.2 (2.5, 4.0)	0.80 (0.64–1.01)	17.0 (15.7, 18.3)	1.01 (0.93–1.09)	42.0 (38.9, 45.3)	1.16 (1.07–1.25)
Nursing care facilities (8270)	14.7 (12.4, 17.2)	1.23 (1.05–1.45)	7.2 (5.7, 9.0)	0.99 (0.78–1.24)	14.4 (12.2, 16.9)	1.17 (0.99–1.37)	4.6 (3.3, 6.2)	1.05 (0.77–1.42)	21.8 (19.3, 24.4)	1.22 (1.08–1.37)	46.2 (40.8, 51.7)	1.23 (1.09–1.39)

CI = confidence interval

Ref = reference group

NR = Not reported because relative standard error of estimates is >30%.

aPR = adjusted prevalence ratio

Italics indicate statistically significantly elevated adjusted prevalence ratio.

[a] Adjusted prevalences given for non-healthcare workers. For each healthcare occupation, the unadjusted prevalence is given for each condition, followed by the adjusted prevalence ratio comparing adjusted prevalence in that occupation to the adjusted prevalence for non-healthcare workers. Results are adjusted for age (18–34, 35–54, >=55), sex (male, female) and race/ethnicity (non-Hispanic White, non-Hispanic African American, non-Hispanic other, Hispanic).

[b] Elicited only in 2018 BRFSS questionnaire.

[c]Respondents with census industry codes (0170–7980 or 8290–9500) and census occupation not in (3000–3650).

[d]Respondents with census industry codes 7970–8270