



Differential effects of healthcare worker burnout on psychotropic medication use and misuse by occupational level

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Abstract

Purpose Burnout has been well examined among physicians and other high-wage, high-autonomy healthcare positions. However, lower-wage healthcare workers with less workplace autonomy (e.g., medical assistants, nurses' aides) represent a substantial proportion of the workforce, but remain understudied. We aimed to examine the effects of burnout on psychotropic medication use and misuse and whether these effects differed by occupational level.

Methods In March 2022, we collected data from a diverse sample of US healthcare workers ($N=200$) and examined the cross-sectional relationship between burnout and changes in prescribed psychotropic medication (i.e., starting, stopping, and/or having a change in the dose/frequency) during the COVID-19 pandemic. We also separately examined the relationship between burnout and psychotropic medication misuse (i.e., without a prescription, in greater amounts, more often, longer than prescribed, and/or for a reason other than prescribed). We stratified models by occupational level (prescribers/healthcare administrators vs. other healthcare workers).

Results Greater burnout was associated with higher odds of changes in prescribed psychotropic medication among prescribers/healthcare administrators (aOR = 1.23, 95% CI 1.01, 1.48), but not among other healthcare workers (aOR = 1.04, 95% CI 0.98, 1.10). Greater burnout was not associated with psychotropic medication misuse among prescribers/healthcare administrators (aOR = 0.96, 95% CI 0.82, 1.12) but was associated with increased odds of psychotropic medication misuse among other healthcare workers (aOR = 1.07, 95% CI 1.01, 1.14).

Conclusions Potential disparities in help-seeking and healthcare access might manifest in non-medical use of prescription drugs among some healthcare workers, which has implications for worker safety and well-being.

Keywords Burnout · Healthcare workers · Psychotropic medication · Non-medical use

Introduction

Over 20 million people in the United States (US) are employed in the Healthcare and Social Assistance sector [1]. Although people working in this sector have always been susceptible to occupational burnout (i.e., a state of mental exhaustion, depersonalization, and decreased sense of personal accomplishment) [2], the COVID-19 pandemic has

exacerbated these experiences to unprecedented levels [3]. Numerous studies published in the post-pandemic era have demonstrated that burnout is a prevalent and systemic issue among healthcare workers around the world [4–10]. Indeed, a recent study demonstrated that healthcare workers experienced greater burnout during the COVID-19 pandemic than those working in other high-stress occupations, like first responders and volunteer disaster relief workers, in addition to experiencing greater burnout than the general population [10]. The US has experienced a series of healthcare resource shortages and continues to have one of the highest COVID-19 mortality rates per capita [11], resulting in substantial strains on the US healthcare workforce. Moreover, a recent Surgeon General's Advisory highlights a critical call to action to better understand and address burnout among US healthcare workers [12].

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Research has shown that burnout is a common problem among physicians [2, 13–16] and is associated with \$4.6 billion in costs related to turnover and reduced clinical hours each year [17]. Physician burnout has also been associated with increased mental health symptomatology [18], reduced help-seeking [19], increased medical errors, and other negative sequelae [20]. While some research suggests that burnout is also prevalent among nurses [21], much less is known about other types of healthcare occupations, particularly lower-wage healthcare support roles characterized by high job demands and low autonomy in the workplace. Importantly, a Mercer Health Care Market Analysis report projected a national shortage of more than 3 million low-wage health workers within the next 5 years [22], and burnout among this population has been identified as a critical problem expected to exacerbate this labor shortage [12].

A recent study of healthcare workers in critical care units of English hospitals [23] suggests that nearly half of hospital-based healthcare workers experience clinically significant symptoms of problem drinking, anxiety, depression, or PTSD. Importantly, findings from this study demonstrated that physicians had significantly better mental health than other healthcare occupations working in the same healthcare settings, suggesting that there may be important differences according to occupational level that have not been well explored. Further, research conducted by Prins and colleagues [24] examined more than 12,000 full-time workers and demonstrated that occupations characterized by higher authority, autonomy, and expertise were associated with lower odds of a range of psychiatric symptomatology. Despite the compelling evidence that work-related stressors have a deleterious effect on physicians, those working in lower-wage healthcare positions characterized by high demands and low autonomy may be at even greater risk.

The mental exhaustion, depersonalization, and decreased sense of personal accomplishment experienced by healthcare workers can result in a number of mental and physical responses [2], which can be understood within the context of stress and coping. Stress has been hypothesized to be a transactional process (i.e., involves a transaction between an individual and their environment), and coping is thought to be informed by both cognitive appraisal of the stressor and the resulting emotional response [25]. The use and misuse of substances as an external way to modify emotions have long been hypothesized as a coping mechanism in response to stress (i.e., self-medication theory) [26].

A recent systematic review of coping and burnout during the COVID-19 pandemic demonstrates that healthcare workers employ a variety of coping mechanisms [27]. However, research suggests that healthcare workers may be more likely to employ maladaptive coping strategies (e.g., self-distraction) over other more adaptive approaches [28] to cope with burnout. For example, an examination of the

behaviors of a sample of Kenyan healthcare workers before and during the COVID-19 pandemic suggests that there was an increase in the prevalence self-medication [29]. Moreover, a study of physicians practicing medicine in European countries showed that greater burnout was associated with a higher likelihood of psychotropic medication use [30], suggesting that psychotropic medications may be used as a coping mechanism in this occupational context. Given the self-medication theory and that psychotropic medication use is highly prevalent among adults in the US [31, 32], it is possible that burnout among healthcare workers might manifest in both prescribed psychotropic medication use and misuse (i.e., non-medical use). However, the extent to which burnout affects these outcomes among non-physician healthcare workers is largely unknown. Further, there may be important differences in the effects of burnout on psychotropic medication use and misuse among different occupational levels.

Current study

To begin to address some of the identified gaps in the literature, the current study examines the effects of burnout on prescribed psychotropic medication use and misuse (i.e., non-medical use) among a sample of US healthcare workers during the COVID-19 pandemic. Given the varying levels of job demands, autonomy, wages, and social supports associated with different healthcare occupations and findings from prior research regarding the varying psychiatric symptomatology of different occupational levels [23, 24], we hypothesized that there might be differential effects of burnout on psychotropic medication use and misuse by occupational level (i.e., prescriber/healthcare administrator vs. other healthcare workers).

Methods

Participants and procedure

In March 2022, we recruited a diverse sample of US healthcare workers ($N=200$) using targeted social media recruitment methods. To be eligible for the study, participants needed to be at least 18 years of age and currently working for wages in one or more of the following healthcare settings in the US: hospital, ambulatory or outpatient clinic, nursing or residential facility, social assistance program, and/or home healthcare. Participants also needed to be able to read and understand the English language and be willing and able to participate. Participants completed one online survey at a place of their choosing, which took approximately 60 min to complete. Upon completion, participants were compensated in the form of an electronic \$50 gift card. The study protocol was approved by the Institutional Review Board

of the University of Illinois Urbana-Champaign. A total of 284 individuals were eligible for inclusion in the study. Of those, 200 (70.4%) agreed to participate and completed the survey. We conducted sensitivity analyses and did not find any statistically significant differences in age, gender identity, or work setting between participants, who were eligible and participated and participants who were eligible but did not participate.

Our sample included a broad range of healthcare occupations, including low-wage healthcare support roles (e.g., nursing assistants, dietary aides, administrative support staff), licensed practical nurses, registered nurses, psychologists, case managers, social workers, physical therapists, mid-level providers (e.g., nurse practitioners, physician assistants), both resident and attending physicians, pharmacists, dentists, as well as healthcare administrators. The sample worked in a variety of healthcare settings, including ambulatory/outpatient clinics, home healthcare, hospitals, social assistance programs, and nursing/residential facilities. Additional details about the study sample are shown in Table 1.

Measures

Burnout

We assessed burnout with the English version of the Oldenburg Burnout Inventory (OLBI) [34, 35], a 16-item measure of occupational burnout severity. The OLBI assesses two core dimensions of burnout: exhaustion and disengagement (from work), by asking respondents to rate their level of agreement on a 4-point Likert scale (from strongly disagree to strongly agree) with a series of statements related to their work experience. Total scores range from 16 to 64, with higher scores indicating greater burnout. Example items include “Lately, I tend to think less at work and do my job almost mechanically”; “During my work, I often feel emotionally drained”; and “After my work, I usually feel worn out and weary.” The OLBI has been shown to be a valid and reliable measure of burnout across a diverse range of occupations and populations [34, 36] and had good internal consistency in our sample ($\alpha = 0.86$). Total OLBI was parameterized as a count variable in all analyses.

Changes in psychotropic medication

To assess changes in prescribed psychotropic medication use among this sample of healthcare workers, we used the following lead-in: “Many people are prescribed psychiatric medications. These are medications for your mental health, including anti-depressant medications, anti-anxiety medications, anti-psychotic medications, mood stabilizer medications, and stimulant medications for conditions

like ADHD. Answer the following questions about your use of prescribed psychiatric medications.” Participants were asked a series of questions related to their medication use, including “Are you currently prescribed any psychiatric medication(s) by a healthcare provider?”; “During the COVID-19 pandemic, did you start taking any new psychiatric medication(s)?”; “During the COVID-19 pandemic, did you stop taking any psychiatric medication(s)?” and “During the COVID-19 pandemic, did your dose or frequency of psychiatric medication(s) change?” Participants were also allowed to specify which medications they were currently taking and those that they had started, stopped, or changed during the COVID-19 pandemic. Given that finding the appropriate type(s) and dose(s) of psychotropic medication(s) to treat a patient’s mental health symptomatology can require trial and error [37–40], we generated a dichotomous variable that characterized any changes to psychotropic medications based on a medical provider’s recommendation. We coded all participants who reported starting, stopping, and/or having a change in the dose/frequency of any of their prescribed psychiatric medication during the COVID-19 pandemic as “Yes” and those who did not as “No.”

Psychotropic medication misuse

We assessed healthcare workers’ psychotropic medication misuse in the past three months with the National Institute on Drug Abuse (NIDA) Modified Alcohol, Smoking and Substance Involvement Screening Test (ASSIST), which has been shown to be valid and reliable across a diverse range of settings and cultures [41]. Psychotropic medication misuse was defined as the (non-medical) use of prescription stimulants (e.g., Ritalin, Concerta, Dexedrine, Adderall), sedatives and sleeping medications (e.g., Valium, Serepax, Ativan, Xanax), or other psychotropic medications “on your own, that is either without a doctor’s prescription, in greater amounts, more often, or longer than prescribed, or for a reason other than a doctor said you should use them” [41]. Psychotropic medication misuse was assessed with the following question: “In the past three months, how often have you used [substance]?” Any use in the past three months was considered a positive screen for psychotropic medication misuse and was dichotomized (no/yes) in our analyses.

Occupational level

Participants reported their type of occupation in the healthcare sector. To differentiate between high-earning high-autonomy positions from other roles, we first grouped together healthcare administrators and prescribers (e.g., physicians, nurse practitioners, physician assistants) and then grouped other healthcare professionals together (e.g.,

Table 1 Sample characteristics ($N=200$ healthcare workers)

	Overall sample ($N=200$) % (n) or mean (\pm SD)	Prescriber/administrator ($n=49$) % (n) or mean (\pm SD)	Other healthcare worker ($n=151$) % (n) or mean (\pm SD)
Age, years	30.8 (\pm 7.3)	31.5 (\pm 4.2)	30.6 (\pm 8.1)
Gender identity	–	–	–
Man	32.5% (65)	53.1% (26)	25.8% (39)
Woman	66.5% (133)	46.9% (23)	72.9% (110)
Non-binary/genderqueer	1.0% (2)	0.0% (0)	1.3% (2)
Race/ethnicity	–	–	–
Non-Hispanic White	54.5% (109)	42.9% (21)	58.3% (88)
Non-Hispanic Black	17.5% (35)	12.2% (6)	19.2% (29)
Non-Hispanic Asian	14.0% (28)	34.7% (17)	7.3% (11)
Non-Hispanic American Indian or Alaska Native	1.0% (2)	2.0% (1)	0.7% (1)
Hispanic or Latinx	10.0% (20)	4.1% (2)	11.9% (18)
Other	3.0% (6)	4.1% (2)	2.7% (4)
Education	–	–	–
High school diploma or equivalent (GED)	3.0% (6)	0.0% (0)	4.0% (6)
Some college (no degree)	5.0% (10)	0.0% (0)	6.6% (10)
Associate's/other technical 2-year degree	14.0% (28)	0.0% (0)	18.5% (28)
Bachelor's/other 4-year degree	35.5% (71)	0.0% (0)	47.0% (71)
Graduate or professional degree	42.5% (85)	100.0% (49)	23.8% (36)
Family income	–	–	–
Less than \$10,000	0.5% (1)	0.0% (0)	0.7% (1)
\$10,000–\$19,999	3.5% (7)	0.0% (0)	4.6% (7)
\$20,000–\$29,999	2.5% (5)	0.0% (0)	3.3% (5)
\$30,000–\$39,999	4.5% (9)	0.0% (0)	6.0% (9)
\$40,000–\$49,999	10.0% (20)	4.1% (2)	11.9% (18)
\$50,000–\$74,999	19.5% (39)	20.4% (10)	19.2% (29)
\$75,000–\$99,999	20.0% (40)	12.2% (6)	22.5% (34)
\$100,000–\$149,999	24.0% (48)	30.6% (15)	21.9% (33)
\$150,000 or more	15.5% (31)	32.7% (16)	9.9% (15)
Years in job	–	–	–
Less than 1 year	14.5% (29)	10.2% (5)	15.9% (24)
1–5 years	61.0% (122)	77.6% (38)	55.6% (84)
6–10 years	17.5% (35)	8.2% (4)	20.5% (31)
11–20 years	6.0% (12)	4.1% (2)	6.6% (10)
More than 20 years	1.0% (2)	0.0% (0)	1.3% (2)
Hospital setting	–	–	–
No	46.0% (92)	14.3% (7)	56.3% (85)
Yes	54.0% (108)	85.7% (42)	43.7% (66)

SD standard deviation

registered nurses, nursing assistants, dietary aides, administrative support staff), resulting in a dichotomous occupational level variable (healthcare administrator/prescriber vs. other healthcare worker).

Covariates

Age Participants self-reported their age in years. Given that burnout is more prevalent among younger healthcare

workers [5] and that there are notable age differences in the rates of psychotropic medication use [31, 42, 43] and misuse [44], we included age in years as a covariate in all adjusted models.

Gender identity All participants self-reported their gender identity (i.e., man, woman, non-binary, genderqueer, or other gender). Rates of psychological symptomatology and substance use are high among gender minorities [45], and there are significant differences in substance use patterns [44] and the prevalence of psychiatric medication use between men and women [43]. Additionally, some evidence suggests that there may be gender-specific differences in the effects of burnout among healthcare workers [46, 47]. As such, we included gender identity in all of our adjusted models to account for its potential confounding effects.

Years worked in current job Participants were asked to indicate the number of years that they had been working in their current healthcare job at the time of their survey. Findings regarding the length of time in job and burnout are mixed. Some studies suggest that burnout tends to be more prevalent among early-career workers [48], while others suggest that those with a longer length of service are at greater risk [49]. Years in job was included as an ordinal variable (i.e., less than 1 year, 1–5 years, 6–10 years, 11–20 years) in all adjusted models.

Type of healthcare setting Although burnout is prevalent across all healthcare settings [50], there is substantial evidence suggesting that those working in hospital settings may be especially vulnerable [51–53]. In order to address these potential differences in the effects of burnout on psychotropic medication use and misuse, we included type of healthcare setting (i.e., hospital setting vs. non-hospital setting) in all adjusted regression models.

Data analysis

First, we used descriptive statistics to characterize our overall sample and by occupation type (i.e., prescriber or healthcare administrator vs. other healthcare workers). Second, to examine the cross-sectional effects of burnout on starting, stopping, or having a change in dose and/or frequency of psychotropic medication, we ran separate logistic regression models stratified by occupation type. Next, we also examined the cross-sectional effects of burnout on psychotropic medication *misuse* by running separate logistic regression models stratified by occupation type. Odds ratios (ORs) and 95% confidence intervals (CIs) are reported. We then added age, gender identity, years worked in current job, and type of healthcare setting as covariates to all regression models and report adjusted odds ratios (aORs) and 95% CIs.

Results

Descriptive results

This sample of healthcare workers represented 28 different US states plus Washington, DC, ranged in age from 19 to 58 years, included men ($n=65$), women ($n=133$), and non-binary/genderqueer people ($n=2$), and the sample was racially and ethnically diverse. Although the sample comprised predominantly of women (66.5%), this is consistent with demographic estimates of healthcare workers nationally [33]. Among this sample of healthcare workers, the mean (\pm SD) OLBI score was 41.4 (\pm 7.0). Prescribers/healthcare administrators had a significantly *lower* mean total burnout score, exhaustion subscale score, and disengagement subscale score than other healthcare workers (Fig. 1). More than 1 in 5 healthcare workers (21.0%) reported currently being prescribed psychotropic medication(s). Overall, the prevalence of starting, stopping, and/or having a change in the dose/frequency of prescribed psychotropic medication during the COVID-19 pandemic was 22.5% (Table 2) and did not significantly differ by occupational level (prescriber/healthcare administrators: 20.4% vs. other healthcare workers: 23.2%; $p > 0.10$). Participants indicated that these prescriptions included anti-anxiety, anti-depressant, mood stabilizer, and sleeping medications. The overall prevalence of psychotropic medication misuse (i.e., non-medical use) was 21.0%, with a trend-level difference between prescribers/healthcare administrators (12.2%) and other healthcare workers (23.8%; $p < 0.10$). Among those reporting psychotropic medication misuse ($n=42$), 78.6% reported non-medical use of prescription sedatives and sleeping medications (e.g., Valium, Serepax, Ativan, Xanax), 26.2% reported non-medical use of prescription stimulants (e.g., Ritalin,

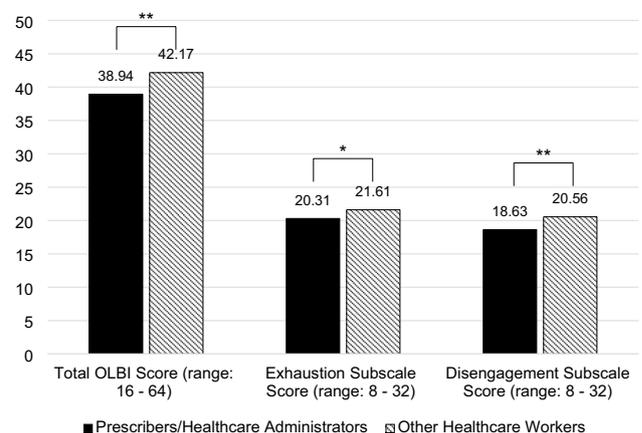


Fig. 1 Mean Oldenburg Burnout Inventory scores by occupation. ** $p < 0.01$, * $p < 0.05$; OLBI Oldenburg Burnout Inventory

Table 2 Overall sample prevalence of outcomes

	% (n)
Any change in prescribed psychotropic medication	22.5% (45)
Started new psychotropic medication	18.5% (37)
Stopped psychotropic medication	4.0% (8)
Change in the dose/frequency of psychotropic medication	13.0% (26)
Any psychotropic medication misuse	21.0% (42)
Prescription stimulant misuse	5.5% (11)
Prescription sedative or sleeping medication misuse	16.0% (32)
Other psychotropic medication misuse	1.5% (3)

Concerta, Dexedrine, Adderall), and 7.1% reported non-medical use of other psychotropic medications (e.g., Zoloft, Trazodone, Lamictal, Seroquel).

Effect of burnout on starting, stopping, or having a change in dose/frequency of psychotropic medication

Among healthcare prescribers and administrators, greater burnout was associated with higher odds of starting, stopping and/or having a change in their prescribed psychotropic medication (OR = 1.21, 95% CI 1.03, 1.42; Table 3). This association remained statistically significant after controlling for age, gender identity, years worked in job, and whether they worked in a hospital setting (aOR = 1.23, 95% CI 1.01,

1.48). However, among other healthcare workers, there was no association between burnout and the odds of starting, stopping and/or having a change in prescribed psychotropic medication in unadjusted (OR = 1.04, 95% CI 0.99, 1.10) and adjusted models (aOR = 1.04, 95% CI 0.98, 1.10).

Effect of burnout on psychotropic medication misuse

There was no association between the severity of burnout and the odds of psychotropic medication misuse among prescribers/healthcare administrators (OR = 0.97, 95% CI 0.85, 1.10; Table 4). The effect remained non-significant after controlling for relevant covariates (aOR = 0.96, 95% CI 0.82, 1.12). However, among other healthcare workers, greater burnout was associated with higher odds of psychotropic medication misuse (OR = 1.06, 95% CI 1.01, 1.14), and this effect remained statistically significant in our adjusted model (aOR = 1.07, 95% CI 1.01, 1.14).

Discussion

The current study provides compelling evidence that not only is burnout a prevalent and systemic issue in healthcare settings, but that greater burnout is associated with a greater likelihood of psychotropic medication use and misuse among healthcare workers. Notably, these effects differed by occupational level. While greater burnout was associated

Table 3 Effect of burnout on starting, stopping, or having a change in dose/frequency of psychotropic medication by occupation type

	Starting, stopping, or changing psychotropic medication, prescriber/administrator (n = 49)		Starting, stopping, or changing psychotropic medication, other healthcare worker (n = 151)	
	OR (95% CI)	aOR (95% CI)	OR (95% CI)	aOR (95% CI)
Oldenburg Burnout Inventory score	1.21 (1.03, 1.42)*	1.23 (1.01, 1.48)*	1.04 (0.99, 1.10)	1.04 (0.98, 1.10)
Age		0.94 (0.76, 1.15)		1.01 (0.96, 1.07)
Gender identity		–		–
Man		Referent		Referent
Woman		6.13 (0.90, 41.87)		1.17 (0.45, 3.10)
Non-binary/genderqueer		NA ^a		NA ^b
Years in job		0.82 (0.19, 3.55)		1.04 (0.60, 1.80)
Hospital setting		–		–
No		Referent		Referent
Yes		1.07 (0.12, 9.76)		0.59 (0.26, 1.35)

OR odds ratio, aOR adjusted odds ratio, CI confidence interval, NA not applicable (omitted from model)

* $p < 0.05$

^aNo prescribers or healthcare administrators identified as non-binary or genderqueer

^bBoth participants who identified as non-binary, genderqueer, or other gender reported starting, stopping, or having a change in dose/frequency of psychotropic medication

Boldface text indicates statistically significant

Table 4 Effect of burnout on psychotropic medication misuse

	Psychotropic medication misuse, prescriber/administrator (<i>n</i> = 49)		Psychotropic medication misuse, other healthcare worker (<i>n</i> = 151)	
	OR (95% CI)	aOR (95% CI)	OR (95% CI)	aOR (95% CI)
Oldenburg Burnout Inventory score	0.97 (0.85, 1.10)	0.96 (0.82, 1.12)	1.06 (1.01, 1.12)*	1.07 (1.01, 1.14)*
Age		0.80 (0.59, 1.09)		1.00 (0.95, 1.06)
Gender identity		–		–
Man		Referent		Referent
Woman		3.32 (0.44, 24.91)		0.43 (0.18, 1.05)
Non-binary/genderqueer		NA ^a		NA ^b
Years in job		2.63 (0.40, 17.51)		1.59 (0.92, 2.75)
Hospital setting		–		–
No		Referent		Referent
Yes		1.31 (0.11, 16.20)		0.96 (0.43, 2.15)

OR odds ratio, aOR adjusted odds ratio, CI confidence interval, NA not applicable (omitted from model)

* $p < 0.05$

^aNo prescribers or healthcare administrators identified as non-binary or genderqueer

^bNeither participant who identified as non-binary, genderqueer, or other gender reported psychotropic medication misuse

Boldface text indicates statistically significant

with starting, stopping, and/or having a change in prescribed psychotropic medication among healthcare prescribers and administrators, greater burnout was associated with psychotropic medication misuse among other healthcare workers. Consistent with other research that demonstrated less mental health symptomatology among higher-wage occupations [23, 24], findings from the current study suggest that, on average, healthcare prescribers and administrators experience significantly lower levels of burnout than other healthcare workers.

While poverty and substance misuse are inextricably and bidirectionally related, differences may not be explained by social stratification based on individual attributes alone (e.g., socioeconomic status). Rather, mechanisms that produce social stratification may increase the risk for problematic substance use. For example, a study examining data from the 1983 to 2017 waves of the Panel Study of Income Dynamics [54] showed that greater labor exploitation (i.e., working unpaid hours) was associated with greater psychological distress. Thus, despite the compelling evidence that work-related stressors have a deleterious effect on physicians, those working in lower-wage healthcare positions characterized by high demands and low autonomy may be at even greater risk.

Although self-medication theory posits that people use substances as an external way to modify their emotions [26], self-medication theory has been criticized for oversimplifying the underlying causes of substance use and misuse [55]. The differential effects of burnout on psychotropic medication use and misuse by occupational level observed in the current study might be explained by barriers to help-seeking

and access to care, particularly among lower-wage healthcare workers. A national examination of low-income adults in the US with psychological distress shows that although the prevalence of health insurance among this population has increased over time, mental health service use has not changed and structural barriers have increased [56]. It is possible that the psychotropic medication misuse observed in the current study might be a manifestation of these barriers. Many physicians report that they would be reluctant to seek professional care for a serious emotional problem due to fear of stigma and professional consequences [19]. However, recent population data suggests that the COVID-19 pandemic was associated with a substantial increase in accessing mental health services among physicians [57]. This aligns with our finding of increased burnout among physicians and healthcare administrators being associated with higher odds of starting, stopping, and/or having a change in their prescribed psychotropic medication.

Research also suggests that there are systematic differences in the demographic characteristics of people who are and are not prescribed certain psychotropic medications, which may also affect the results observed in this study. For example, one study suggests that people who are older and non-Hispanic White are more likely to be prescribed benzodiazepines than people who are younger or minoritized [58]. Additionally, studies suggest that benzodiazepine prescribing is also likely to be influenced by the gender of both the prescriber and the patient. Some research suggests that men are more likely to prescribe benzodiazepines [59, 60], while women are more likely to be prescribed benzodiazepines [60]. Given these prescribing patterns, it is possible that the

prescribers/healthcare administrators in the current study may be more likely to be prescribed psychotropic medications for their psychological distress than other healthcare workers.

While some research suggests that personality trait characteristics, like psychological hardiness (i.e., dispositional resilience) may be appropriate intervention targets for reducing burnout [10], systemic workplace contributors to burnout should also be acknowledged and addressed. For example, low perceived safety in the workplace and redeployment to an unfamiliar work environment have both been associated with increased burnout among healthcare workers from various countries [16]. Likewise, chronic understaffing is associated with higher levels of burnout [61], and in the context of scarce medical resources, some healthcare workers have been faced with having to prioritize the care of patients who are more likely to survive, resulting in intense ethical dilemmas [62]. Moreover, women are overrepresented in the low-wage healthcare workforce [33] and are more likely to be exposed to biological risks and experience work-related stress and burnout [63]. Coupled with barriers to help-seeking and access to care, lower-wage healthcare workers may be especially vulnerable to these systemic issues.

Limitations

Our findings should be interpreted within the context of this study's limitations. First, all data are cross-sectional, so we are limited in our ability to draw causal conclusions from these data. It is possible that there are additional factors which might partially explain the associations observed in this study that should be examined in future research (e.g., hours worked, mental health, social support). Second, all data were self-reported and as such, are susceptible to social desirability bias. However, confidential computer-assisted interviewing has been shown to produce valid estimates of substance use, mental health symptomatology, and other sensitive topics [64–68] and is generally preferred by research participants over face-to-face interview methods [64, 69]. Third, although our sample of healthcare workers was diverse with respect to demographic characteristics, data were collected using non-probability sampling methods and our findings may not necessarily be representative of healthcare workers nationally. Our sample was relatively young, and prior research shows that burnout is more prevalent among younger healthcare workers [5] and young adults are more likely to misuse prescription medications than their older counterparts [44]. Additionally, given that our sample was recruited via social media and participants were given an incentive, the current study is subject to selection bias. However, social media has been shown to be advantageous for observational study recruitment [70] and is frequently more effective than traditional methods (e.g., print, e-mail)

[71]. Moreover, appropriate research payment amounts have been shown to be non-coercive and increase participant satisfaction [72]. Fourth, our sample size may have limited our statistical power to detect significant effects, increasing the probability of a Type II error. However, given the findings of the current study, it is possible that the true effect of burnout on psychotropic medication use and misuse may be even stronger than what is observed here. Future research should examine these effects longitudinally and among a larger sample of healthcare workers to better understand how burnout may affect these outcomes over time.

Strengths

Despite these limitations, our study has several strengths that should also be noted. First, we examined a critically important and timely issue among a large and growing population [1]. Second, the inclusion of a broad range of healthcare occupations is important, given that much of the research on occupational burnout in healthcare settings tends to focus on physicians [e.g., 2, 13–16]. Specifically, healthcare workers in lower-wage positions that are characterized by high demands and low autonomy remain understudied and experience unique occupational hazards. Finally, findings from the current study are bolstered by the use of a validated measure of non-medical use of psychotropic medications [41] and a diverse sample recruited from across the US that is demographically comparable to healthcare workers nationally [33].

Conclusions and future directions

Results from the current study suggest that occupational burnout is not only prevalent among a broad range of healthcare workers, but that it is associated with both psychotropic medication use and misuse on the basis of occupational level. These results point to potential disparities in help-seeking and healthcare access among lower-wage healthcare workers and have implications for the safety and well-being of this population. In addition to addressing systemic drivers of occupational burnout, universal screening for burnout, robust employee assistance programs, and workplace interventions are recommended.

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Author contributions RH: conceived of and designed the study, conducted the formal analysis, and wrote the first draft of the manuscript

with sections contributed by SL and RS. All authors reviewed and approved the final manuscript.

Data availability The data that support the findings of this study are available on request from the corresponding author, RAH.

Declarations

Conflict of interest The authors have no conflicts of interest to disclose.

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