



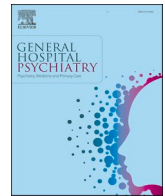
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Letter to the editor

Healthcare provider distress before and since Covid-19

Even prior to the onset of COVID-19, healthcare workforce distress was recognized as a professional and public health crisis [1,2]. Healthcare workers' suffering including burnout, secondary trauma or second victim phenomena, substance use, or abuse, depression and suicide, and received national attention and calls for action [3–5]. Since COVID-19, the crisis appears to have intensified, leading to unprecedented levels of emotional stress and despair for the general population [5], perhaps especially for healthcare providers [6,7]. This study compared self-reported burnout, depressive symptoms, alcohol use, intense affective states, and suicidal ideation in 1177 medical students, physician trainees, faculty physicians, and healthcare staff at one academic center who completed an online mood and behavior questionnaire during the 2 years immediately preceding the pandemic (3/1/18–3/12/20) to 1134 during the subsequent 2 years (3/13/20–2/28/22).

The questionnaire is part of UC San Diego's adaptation of the American Foundation of Suicide Prevention's (AFSP) anonymous, online, Interactive Screening Program (ISP) [8]. Except where noted otherwise, all items were scored on a 4-point scale: 0- *not at all*, 1- *some of the time*, 2- *a lot of the time* to 3- *most or all the time*.

- The **burnout** item, "*feeling burned out from your work*;" was defined as positive by a score ≥ 2 .
- **Depression** severity was evaluated using a modified version of the 9-item Patient Health Questionnaire (PHQ-9). "Depression" was defined as a total score of 10–27 (moderate to severe depression).
- **Alcohol use** was measured with the following: "*Feeling like you were drinking too much*;" A positive response was defined by a score of ≥ 2 .
- Adapted from the Affective State Questionnaire [9], participants rated the frequency of the following **intense emotional states**: *Feeling nervous or worrying a lot; becoming easily annoyed or irritable; feeling your life is too stressful; having arguments or fights; feeling intensely anxious or having anxiety attacks; feeling intensely lonely; feeling intensely angry; feeling hopeless; feeling desperate, and feeling out of control*. Scores of "a lot of the time" or "most or all the time" (scores ≥ 2) were considered positive responses.
- **Suicidal thoughts and behaviors in the past 2 weeks** were measured with the following items: "*had thoughts about taking your own life*;" "*planned ways of taking your own life*;" and "*done things to hurt yourself*". A score ≥ 1 on any of these items indicated suicidal thought/behavior being present.
- **Current mental health treatment and treatment-seeking behavior** were measured by

Table 1

Logistic regression models of frequency of Burnout, Depression, Substance Use, Intense Emotional States, and Suicidal Ideation prior to and during the COVID-19 pandemic.

Measure	Pre-COVID (n = 1171)		During-COVID (n = 1134)		Model statistics		
	N	%	N	%	OR (95% ci)	Z-score	p-value
Burnout*	593	49.1%	645	58.0%	1.42 (1.20, 1.67)	4.06	<0.001
Depression**	527	43.6%	552	49.6%	1.27 (1.07, 1.50)	2.79	0.005
Drink too much*	68	5.6%	82	7.4%	1.36 (0.97, 1.91)	1.76	0.078
Intense Emotional States*							
Nervous	638	52.8%	677	60.9%	1.36 (1.15, 1.62)	3.58	<0.001
Annoyed	519	43.0%	584	52.5%	1.49 (1.26, 1.76)	4.64	<0.001
Stress	606	50.2%	639	57.5%	1.33 (1.12, 1.57)	3.32	0.001
Fights	162	13.4%	211	19.0%	1.54 (1.23, 1.94)	3.71	<0.001
Anxious	364	30.1%	393	35.3%	1.30 (1.09, 1.56)	2.85	0.004
Lonely	294	24.3%	336	30.2%	1.32 (1.10, 1.60)	2.93	0.003
Angry	154	12.7%	209	18.8%	1.61 (1.27, 2.03)	4.00	<0.001
Hopeless	240	19.9%	293	26.3%	1.45 (1.18, 1.76)	3.62	<0.001
Desperate	170	14.1%	205	18.4%	1.35 (1.08, 1.70)	2.61	0.009
Out of Control	230	19.0%	256	23.0%	1.28 (1.04, 1.57)	2.33	0.020
Suicidal Ideation***	126	10.5%	104	9.4%	0.82 (0.39, 1.70)	-0.54	0.587

Binary outcomes, using logistic regression. Effects are expressed as odds ratios (ORs) with 95% confidence intervals (ci) in parentheses. All models included race, gender, position as covariates.

* none/some of the time vs. a lot/most of the time on burnout item.

** PHQ-9 < 10 versus PHQ-9 ≥ 10 .

*** none/some of the time vs. a lot/most of the time.

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yes/no items for whether the participant was currently: “Taking any medication for anxiety;” “taking any medication for depression;” and “getting counseling or therapy”.

This study was approved by the UC San Diego Human Subjects Committee (IRB # 803206). Logistic regression was used to compare responses before and since Covid-19, controlling for race, gender, and academic position. Compared to the 2-years pre-Covid, the 2-year period post-Covid adjusted odds ratios (ORs) revealed greater likelihood of feeling burned out “a lot”, “most”, or “all of the time” (OR = 1.42 (1.20–1.67), $p < .001$); of clinically meaningful levels of depression (PHQ-9 ≥ 10) (OR = 1.27 (1.07–1.50) $p = .005$); and of each of the 10 emotional states previously associated with suicide risk: nervous, annoyed, stress, fights, anxiety, lonely, angry, hopeless, desperate and out of control (ORs 1.28–1.61). There were no significant differences in the likelihood of endorsing drinking “too much,” a lot, or most of the time (OR = 1.36 (0.97, 1.91), $p = .078$); expressing suicidal ideation at least some of the time (OR = 0.82 (0.39, 1.70), $p = .587$); or of receiving pharmacotherapy ((OR = 1.10 (0.92, 1.31) $p = .318$) or psychotherapy (OR = 0.92 (0.72, 1.17) $p = .507$). (See [Table 1.](#))

Anonymous risk screening successfully identified increases in untreated depression, burnout, and multiple intense affective states during the pandemic. While other studies have reported increases in burnout and depression among health care workers during COVID-19 [7], this study adds to the current knowledge base in several important ways. First, we found these foci of distress increased within all disciplines studied. Second, during COVID-19, we identified not only increases in burnout and depression, but also increases in a wide range on intense negative emotions – ranging from nervousness and loneliness thru hopelessness and despair. And, finally, despite these serious stress and distress indicators, we were not able to document a corresponding increase in mental health care. Thus, health trainees and professionals warrant organizational support to mitigate the harmful effects of stress and trauma, prevent burnout, and provide readily accessible treatment for emotional and mental health challenges. The urgency to create a healthier work environment is only increasing [4,10]. Proactive screening, such as the AFSP’s ISP [8], helps identify healthcare workers with untreated depression and refer them to necessary treatments, which can potentially improve workforce health, wellbeing, morale, and the quality of patient care.

Disclosures

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Ethics approval

This study was determined research not requiring institutional review board oversight as it did not meet the definition of human subject’s research. The research was conducted with anonymous pre-existing de-identified data that could not be linked back to the individual; there was no contact with subjects. (IRB # 803206).

Consent

The need for informed consent was waived by the University of California IRB.

Authors’ contribution

All authors certify that they have participated sufficiently in the work to take public responsibility for the content, including participation in the conceptualization, data curation, formal analysis, project administration, and writing or editing the manuscript. Authorship contributions include:

- Conceptualization of study: S Zisook, N Doran, N Downs, D Lee, and J Davidson
- Data curation: S Zisook and A Nestsiarovich
- Formal analysis: S Zisook, N Doran, N Downs, D Lee, A Nestsiarovich and J Davidson
- Funding acquisition and writing - original draft S Zisook,
- Writing - review & editing S Zisook, N Doran, N Downs, D Lee, A Nestsiarovich, and J Davidson
- Approval of the version of the manuscript to be published: S Zisook, N Doran, N Downs, D Lee, and J Davidson

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