

The Effect of Redeployment During the COVID-19 Pandemic on Development of Anxiety, Depression, and Insomnia in Healthcare Workers



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BACKGROUND

During COVID-19 pandemic surges, many hospitals addressed staffing shortages with redeployment of healthcare workers (HCWs), which increases the number of employees able to care for surging numbers of patients. However, redeployed HCWs may face challenges from working in unfamiliar settings or lack of social support in new clinical environments. Trainees redeployed during the COVID-19 pandemic experienced a negative impact on their education and morale.¹ However, few studies have reported on anxiety, depression, and insomnia in redeployed clinicians. We aimed to assess these conditions in HCWs redeployed during the COVID-19 pandemic.

METHODS

From August 31 to September 15, 2020, HCWs were recruited via public Facebook, Twitter, and Instagram accounts to complete an online survey. Self-selection and “healthcare worker” definitions were contingent upon an affirmative answer to, “Have you worked in the clinical setting during the COVID-19 pandemic?” Participants were from all areas of healthcare and training levels. Respondents were asked to consider the “most recent month of greatest clinical intensity and risk of SARS-CoV-2 transmission.” Outcomes included insomnia [Insomnia Severity Index (ISI)² score of > 14], and anxiety and depression [Patient Health Questionnaire-4 (PHQ-4)³ score ≥ 3]. “Redeployment” was defined as being assigned to a new unit/department or returning to work from retirement. Chi-squared analysis tested for associations of redeployment with age, sex, relationship status, race, ethnicity, profession, career stage, and positive SARS-CoV-2 test with our outcomes. Multivariable logistic regression was used to test for independent association of each outcome with “redeployment” controlling for demographics and preexisting sleep, anxiety, and depressive disorders. *p* values less than 0.05 were

considered statistically significant. All analyses were performed using StataCorp. 2019, *Stata Statistical Software: Release 16*, College Station, TX: StataCorp LLC.

RESULTS

Of the 1176 respondents who clicked the survey link, 963 (82%) submitted and 931 (79%) reported their redeployment status. Of these, 208 (22.3%) reported “redeployment.” Common redeployment sites included ICU (22.1%), other inpatient (25.0%), outpatient (21.2%), or ER (17.8%). Groups more likely to be redeployed included age < 30 (25.5% vs. 13.0%), single (41.8% vs. 18.3%), Black (17.3% vs. 4.6%), Hispanic (23.1% vs. 10.2%), trainees (24.0% vs. 15.9%), non-physicians (40.9% vs. 28.9%), and those from a rural area (5.4% vs. 4.2%) or town (28.9% vs. 12.2%) (Table 1). Among redeployed HCWs, non-physicians were more likely to have insomnia (63% vs. 36%), anxiety (70% vs. 43%), and depression (68% vs. 35%). Those with positive COVID test were more likely to have insomnia (49% vs. 30%) and anxiety (54% vs. 38%). All were statistically significant at *p* < 0.05. Being a trainee was not significantly associated with any of the outcomes.

In multivariate analyses, redeployment was independently associated with higher odds of insomnia (2.00 [95% CI 1.29, 3.09], *p* < 0.001), anxiety (2.37 [95% CI 1.67, 3.37], *p* < 0.001), and depression (2.57 [95% CI 1.80, 3.68], *p* < 0.001) (Table 2).

DISCUSSION

Our results suggest that redeployment during the COVID-19 pandemic is associated with significant risk for insomnia, anxiety, and depression among healthcare workers even after controlling for many demographic factors. Given the chronic and relapsing nature of these conditions,^{4,5} it is important to consider that some health challenges of redeployment may have long-lasting consequences.

Limitations of this study include the dynamic nature of the healthcare workforce during this period. Many clinicians chose to switch jobs, including taking positions as traveling clinicians, or leaving healthcare altogether, and more left after our study period. Anxiety, depression, and insomnia may have

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Table 1 Sample Characteristics

	Total N (%)	Redeployed N (%)	Not redeployed N (%)	<i>p</i> value*
Total	931 (100)	208 (22.3)	723 (77.7)	
Age group				
18–29	147 (15.8)	53 (25.5)	94 (13.0)	< 0.001
30–49	690 (74.1)	140 (67.3)	550 (76.1)	
50 +	86 (9.2)	14 (6.7)	72 (10.0)	
Did not answer	8 (0.9)	1 (0.5)	7 (1.0)	
Gender				
Male	218 (23.4)	60 (28.9)	158 (21.9)	0.06
Female	705 (75.7)	145 (69.7)	560 (77.5)	
Did not answer	8 (0.9)	3 (1.4)	5 (0.7)	
Race				
Non-Black	862 (92.6)	172 (82.7)	690 (95.4)	< 0.001
Black	69 (7.4)	36 (17.3)	33 (4.6)	
Ethnicity				
Non-Hispanic	757 (81.3)	152 (73.1)	605 (83.7)	< 0.001
Hispanic	122 (13.1)	48 (23.1)	74 (10.2)	
Did not answer	52 (5.6)	8 (3.4)	44 (6.1)	
Significant other				
Yes	697 (72.7)	117 (56.3)	580 (80.2)	< 0.001
No	219 (22.9)	87 (41.8)	132 (18.3)	
Did not answer	15 (4.5)	4 (1.9)	11 (1.5)	
Profession				
Physician	599 (64.3)	123 (59.1)	514 (71.1)	< 0.001
Non-physician [†]	332 (35.7)	85 (40.9)	209 (28.9)	
Career stage				
Trainee	167 (17.3)	50 (24.0)	115 (15.9)	< 0.001
Non-trainee	760 (78.9)	156 (75.0)	600 (82.1)	
Did not answer	36 (3.74)	2 (1.0)	8 (1.1)	
Location				
Rural	40 (4.4)	11 (5.4)	29 (4.2)	< 0.001
Town	146 (16.2)	59 (28.9)	85 (12.2)	
Suburban	202 (22.4)	43 (21.1)	157 (22.6)	
City/metro	515 (57.0)	91 (44.6)	424 (61.0)	

ICU intensive care unit, CCU coronary care unit, ER emergency room
*Chi-squared analysis

[†]Non-physicians included physicians' assistants, nurse practitioners, registered nurses, physical/occupational/respiratory therapists, and allied healthcare workers, i.e., medical technicians and certified nursing assistants

influenced these decisions, which could limit generalizability. Although social media is widely utilized, using it as a means of recruitment may be considered a limitation. To combat time period bias, we asked participants to consider the month they were most clinically active caring for COVID-19 patients. While this may lead to bias, we felt it would be most representative of serving on the frontlines during the pandemic.

This is one of the first analyses of sleep and mental health effects of HCW redeployment. Considering our findings, future research should examine anxiety, depression, and insomnia in HCWs working outside of their scope of practice or in unfamiliar settings. Specifically, psychological and sleep hygiene support for these workers warrants examination.

Table 2 Risk for Poor Sleep Quality, Insomnia, Anxiety, and Depression Among HCWs Redeployed Vs. Not Redeployed During August 31, 2020–September 15, 2020

	Redeployed (OR, 95% CI)	<i>p</i> value
Insomnia*	2.00 (1.29, 3.09)	< 0.001
Anxiety [†]	2.37 (1.67, 3.37)	< 0.001
Depression [‡]	2.57 (1.80, 3.68)	< 0.001

Odds ratios were from logistic regression models used to test the effect of redeployment on the likelihood of developing one of the outcomes of interest controlling for age, sex, race, ethnicity, career stage, and profession, relationship status, and preexisting sleep disorders, anxiety disorder, or depressive disorder

OR odds ratio, CI confidence interval

*As measured by the Insomnia Severity Index (ISI); insomnia defined as ISI scores in the moderate to severe range (15–28)

[†]Presence of anxiety was defined by a PHQ4 score of ≥ 3 for anxiety-specific questions

[‡]Presence of depression was defined by a PHQ4 score of ≥ 3 for depression-specific questions

Positive leadership support⁶ and reserving redeployment as a last resort may be particularly important first steps for mitigating stress.

Maylyn Martinez, MD^{1,2}

Nancy H. Stewart, DO, MS³

Anya L. Koza, BS⁴

Serena Dhaon⁵

Christiana Shoushtari, MD, MPH⁶

Vineet M. Arora, MD, MAPP⁵

¹Section of Hospital Medicine, Department of Medicine, University of Chicago, Chicago, IL, USA

²Division of Hospital Medicine, University of Chicago Medical Center, Chicago, IL, USA

³Division of Pulmonary, Critical Care, and Sleep Medicine, Department of Medicine, University of Kansas Medical Center, Kansas City, KS, USA

⁴College of Osteopathic Medicine, Kansas City University, Kansas City, MO, USA

⁵Section of General Internal Medicine, Department of Medicine, University of Chicago, Chicago, IL, USA

⁶Advocate Lutheran General Hospital, Park Ridge, IL, USA

Corresponding Author: Maylyn Martinez, MD; Section of Hospital Medicine, Department of Medicine, University of Chicago, Chicago, IL, USA (e-mail: maylynm@medicine.bsd.uchicago.edu).

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Declarations:

Conflict of Interest: The authors declare that they do not have a conflict of interest.

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