

## RESEARCH

# Redeployed PM&R Trainees Rely on Pro-Social Behavior during COVID-19 Pandemic: A Qualitative Survey Analysis

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The wellbeing and emotional resilience of healthcare workers are key components in maintaining essential health care services during the COVID-19 virus outbreak and beyond. This survey, distributed to psychiatry trainees who were redeployed as general medicine physicians taking care of COVID-19 positive patients, sought to find out how trainees were dealing with the existing crisis and to identify their coping strategies used at this time of extreme uncertainty. Trainee wellness and burnout were objectively measured using the Physician Well Being Index (PWBI) and the Maslach Burnout Inventory-Human Services Survey (MBI-HSS) respectively. Independent qualitative analysis was applied to the survey's free response section, which revealed trainees predominantly relied on pro-social coping mechanisms during this time. It furthermore highlighted that trainees desired strong leadership and system wide initiatives geared towards increasing transparency and communication amongst staff. Investigating trainee response at a time of abnormal stress can help trainee programs and hospital systems determine how to implement future initiatives that proactively protect trainee's mental health in the short and long term.

**Keywords:** Health promotion; Burnout, Professional; COVID-19; Internship and Residency

## 1. Introduction

The Coronavirus Disease 2019 (COVID-19) pandemic applied immense pressure on national healthcare systems [14]. Within the U.S., New York City was considered the epicenter of the pandemic [5]. In order to meet the anticipated surge of patients, hospitals converted large swaths of their floors into COVID-19 specific units. Furthermore, specialty resident and fellowship services were recruited and redeployed as hospital medicine residents to help with the surge in patients. Among these, trainees of the Department of Rehabilitation and Human Performance at the Icahn School of Medicine at Mount Sinai were repurposed from their traditional duties and assumed roles as the primary medical teams for COVID-19 positive patients at The Mount Sinai Hospital and Elmhurst Hospital systems [3].

As it was observed in the past during the SARS outbreak in 2005, sources of psychological distress come from the sense of loss of control and vulnerability, fear for self-health and the potential spread of the virus [20]. Surveys of healthcare workers from China early in this COVID-19 pandemic found that health care providers taking care of COVID-19 positive patients were significantly more susceptible to depression, anxiety, insomnia and distress compared to providers who did not care directly for COVID-19 patients [21]. In the early stages of the COVID-19 pandemic, U.S. hospitals were reporting shortages of key equipment such as Personal Protective Equipment (PPE) and ventilators needed to protect staff and care for critically ill patients [13]. Even basic personal logistics such as difficulties with transportation to and from work, obtaining proper childcare, and sustaining periods of isolation from family members in between shifts proved to be a significant source of stress to healthcare workers [14].

Burnout describes a prolonged response to chronic emotional and interpersonal stressors on the job defined by three dimensions: emotional exhaustion, depersonalization, and reduced personal accomplishment [11]. Prior to COVID-19, this phenomenon had become increasingly prevalent among physicians with the fields of Emergency Medicine, Urology, and Physical Medicine and Rehabilitation (PM&R) as the top three affected fields respectively [17, 18]. Consequences of burnout include higher rates of unprofessional behavior and medical errors, decreased quality of patient care, worse patient outcomes, alcohol and substance abuse, depression and suicide [8]. Strategies to successfully combat physician

burnout include increasing Emotional Intelligence training, offering access to mental health care teams, and promoting self-efficacy through constructive feedback and improved autonomy [7, 10, 16].

The wellbeing and emotional resilience of healthcare workers are key components of maintaining essential health care services during the COVID-19 virus outbreak and beyond. This study aimed to measure the level of burnout and well-being of the PM&R trainees during the COVID-19 pandemic. Their experiences will highlight both the positive and negative psychological effects of the outbreak and give insight regarding how to implement future initiatives that proactively protect trainee mental health during crises.

## 2. Methods

### 2.1 Participants

Current residents (PGY 2-4) and fellows (Sports Medicine, Brain Injury Medicine, and Spinal Cord Injury Medicine) in the Department of Rehabilitation and Human Performance were invited to participate in self-administered surveys via their department emails. The surveys were administered using REDCap, a web-based software platform designed to support data capture in a secure and anonymous manner. Survey invitations were sent out on April 27<sup>th</sup> and participants had until May 2<sup>nd</sup> to submit their responses. Study procedures were in accordance with the ethical standards of the Institutional Review Board. The Program of Protection of Human Subjects deemed research activities as exempt human research on April 20th 2020 (IRB-20-03521) and therefore written informed consent was not obtained. Participants were made aware through the email invitation that answers would be entirely anonymous, and that the surveys would be used to study burnout within the residency program. Participation was entirely elective.

### 2.2 Surveys

The Physician Well Being Index (PWBI) and the Maslach Burnout Inventory-Human Services Survey (MBI-HSS), were chosen for initial evaluation of the trainees. Both instruments were selected on the basis of their psychometric properties [2, 9] and direct use to screen for and evaluate degree of burnout respectively.

The seven-question Physician Well-being Index assesses a variety of dimensions such as burnout, fatigue, mental and physical quality of life (QOL), depression and anxiety, and is used as a screening tool to assess trainees at “high risk,” who may be in distress, and who benefit from added resources and subsequent help seeking [2]. It uses yes/no response categories and a total score is calculated by adding the number of ‘yes’ responses. Scores range from [zero to seven], and a threshold score of five is used to identify “high risk” trainees.

The 22-item Maslach Burnout Inventory-Human Services Survey [8] measures degree of burnout. Within the survey three domains are evaluated: Emotional Exhaustion (EE), nine questions; Depersonalization (DP), five questions; and Personal Accomplishment (PA), eight questions. All MBI-HSS items are scored on a Likert scale ranging from “never”=zero to “daily”=six. Scores from within each domain are added up and participants are classified into tiers (High, Moderate or Low) per domain. A high score of EE (score of 27 or higher) or a high score of DP (total score of 10 or higher) is considered indicative of clinically significant burnout in medical trainees [1, 12, 15].

### 2.3 Open Ended Questions

In addition to the validated survey tools, a set of seven open-ended questions were developed by a team, including a Human Performance Coach, to specifically assess the impact of the COVID-19 pandemic on trainee wellbeing. The questions were aimed at addressing: challenges faced by the trainees, coping strategies both successful or not, team building strategies, measuring the sense of support for the trainees by the hospital and residency program, identifying successful support initiatives implemented during the time, and personal growth throughout the time.

Open-ended questions:

- (1) *What do you want the hospital to know regarding your experience working during the COVID-19 pandemic?*
- (2) *What was most difficult for you, emotionally and physically?*
- (3) *What methods did you use to reduce stress and regenerate your energy levels during this time? Were they successful?*
- (4) *How has this experience changed you?*
- (5) *What creates high levels of team morale during a crisis?*
- (6) *Did you feel that the leadership or the administration provided enough support (mental, psychological, financial, PPE, etc) during the time of redeployment? What things were done well and what things could have been improved on?*
- (7) *Explain how you were able to overcome a major personal challenge during the past month.*

### 2.4 Statistical Analysis

All data was collected and entered into a REDCap database [4] “Mount Sinai (New York, NY)” with analyses performed using Microsoft Excel version 14.0 software and R version 3.5.1. Continuous variables were reported as mean ( $\pm$  standard deviation, SD) and categorical variables were reported as count (proportion). Where appropriate, a word cloud figure was generated using the R package ‘wordcloud’ to provide a visual representation of how frequently a word or phrase

appears in a source of textual data. The larger and bolder the word appears, the more frequent this word or phrase was mentioned. Due to the small size of the potential participants within this single residency study, demographic data was not collected. This was done in order to preserve the anonymity of the participants.

### **2.5 Qualitative Analysis**

Free response surveys were read and analyzed by a Human Performance Coach [19] to identify individual and group themes relating to stress responses and overall coping strategies. Free responses were analyzed at Silicea Labs (Turner 20) using Qualitative Analysis Techniques including: sentiment analysis, word association, linguistics, reasoning, and inference.

## **3. Results**

Surveys were sent to all 21 PM&R residents as well as the seven fellows within Brain Injury Medicine, Spinal Cord Injury Medicine and Sports Medicine, for a total of 28 trainees. Thirteen responses were received and completed in full.

### **3.1 MBI-HSS**

Five trainees (38.5%) had either high EE or high DP and met the criteria for burnout. Four (30.8%) had high EE, four (30.8%) had high DP, and two (15.4%) had low PA. Three (23.1%) had both a high EE and a high DP. One (7.6%) responded with high EE, low PA, and high DP. (**Table 1**).

### **3.2 PWBI**

Four trainees (30.8%) scored in the “high risk” for burnout category (mean  $3 \pm 2.04$  SD). (**Table 1**).

### **3.3 Open Ended Questions**

All participants answered the open-ended questions describing their coping strategies, strategies that increased team morale, and their sources of stress (**Table 1**). Word cloud formulations were created for open ended survey question #2 and #3. The main stressors in the word cloud formulation were ‘death’, ‘patients’ and ‘family’. The most used words to describe coping mechanisms were ‘friends’, ‘talking to family’, ‘exercise’, ‘time’, ‘sleep/rest’ (Appendix 1a and 1b).

## **4. Discussion**

The COVID-19 pandemic has been a challenging time which has placed unexpected pressure on PM&R trainees, especially those in cities with large numbers of infections, like New York City. From being put in uncharacteristically intense settings on medicine units, to being separated from friends and family, trainees were subjected to higher than usual amounts of adversity. This study described the commonalities and uniqueness of each trainee’s response to COVID-19 at a time of unprecedented crisis.

Four trainees (30.8%) screened positive as a “high risk” individual for distress according to the PWBI, and five (38.5%) answered with responses that qualified them as suffering from burnout according to the MBI-HSS. Given the nature of the study there is limitation in statistical analyses; however, it is clear that having a third of trainees feeling burnt out at any time is notable.

In order to address these circumstances, it is important to identify the source of stress. Based upon open-responses, the majority of stress during the pandemic stemmed from direct patient care of persons with COVID-19. Almost all trainees referenced either the high death rate, difficulties connecting patients with their families under the increased isolation precautions, or fear of friends and family contracting the virus as the most difficult aspects of the transition. Other stress-inducing factors included having to work temporarily outside the world of psychiatry, being limited in the ability to offer patients rehabilitation services, and concerns about transition to upcoming fellowships or employments.

Amongst the five trainees that qualified as having burnout, there were two common themes related to the difficulties they reported: 1) Handling the death and the circumstances surrounding the death of their patients, and 2) desiring increased communication and direction from the leadership.

COVID-19 has a high mortality rate [6], and increased isolation precautions along with strict hospital protocols created an environment where patients were unable to see their family in person. The situation exposed psychiatry trainees and their patients to a state of irregular and unparalleled stress. To ensure adequate mental health recovery for the trainees, it is paramount for administration to anticipate the effect of such circumstances on trainee mental health well-being and establish readily accessible psychological therapy or other similar outlets equipped to handle these needs.

Furthermore, the trainees desired strong communication from leaders in their hospital and their department. Many trainees reported feelings of consolation through such efforts. These efforts can provide real time information surrounding the pandemic, the status of the hospital and department, and can set trainee expectations for the future. Therefore, it is important to implement and maintain efficacious and compassionate leadership initiatives throughout these times of stress, as they directly affect trainee confidence and wellness.

**Table 1:** Results.

ID	MBI-HSS			WBI		Open Questions Themes		
	EE <sup>†</sup>	PA <sup>‡</sup>	DP <sup>§</sup>	Total Score	High Score (> 5)	Coping Strategies	Strategies that Increase Team Morale	Sources of Stress
1*	High	High	Mod	5	Yes	Prosocial, Exercise, perspective taking on personal purpose	Open team communication, listening to everyone's opinions	Identity as resident, PPE, communications amongst residents & leadership, uncertainty
2*	High	Mod	High	6	Yes	Prosocial, Exercise, Creative expression – Music/Writing	Working as team to help one another, maintaining empathy with other residents	Operating outside rehab, COVID-19 complications, PPE, inadequate compensation
3*	High	Low	High	4	No	Prosocial, time off to recharge, dissociation	N/A	COVID-19 complications, PPE, low communication with leadership.
4*	Mod	Mod	High	3	No	Prosocial, Exercise, Psychologist, gratitude, positive mindset	Free food, team lunches, laughter	COVID-19 complications, Adversity faced by friends and family at time
5	Low	High	Low	1	No	Prosocial, self-regulation of emotions, positive mindset	Team discussions on treatment plans	COVID-19 complications
6	Low	High	Low	0	No	Resting, Self care, role modelling	Leaders of department leading by example	Working outside Rehab Domain, Interruption in planning for new job
7	Low	High	Low	1	No	Prosocial, Exercise, recognizing positive patient outcomes	Team discussions and hangouts, team diversity, Recharge Rooms	COVID-19 complications, death
8	Mod	Mod	Mod	0	No	Exercise, pacing work efforts with rest between shifts	Team discussions and communications, System wide town halls	COVID-19 complications, PPE, Leadership initiatives
9	Mod	Low	Mod	5	Yes	Prosocial, Exercise, Sleep, dissociation	Free Food, seeing patients get better, sharing experiences with team	Not seeing family and friends, keeping up with exercise program, PPE, lapses of communication from leadership, getting sick
10	Low	Mod	Mod	5	Yes	Recharge Rooms, Psychologist, acceptance	Unity within residency, Leadership that leads by example, willpower	COVID-19 complications – patient illness and lack of resolve
11	Low	Mod	Low	3	No	Prosocial, Exercise, Psychologist	Leaders giving recognition to residents, team unity and bonding	Planning for board exams and fellowship, not being able to help out on days off, guilt of having time off
12*	High	Mod	High	3	No	Exercise	Team building, team support, team unity	COVID-19 complications, PPE, Support by Leadership
13	Mod	High	Low	2	No	Prosocial, Psychologist, empathy	Teamwork, building team unity, leadership advocacy	COVID-19 complications, PPE, observing reduced wellbeing in residents

Results per ID participant for MBI-HSS, PWBI, and interpreted themes for the open ended questions. ID\* denotes a resident that had MBI-HSS scoring positive for burnout. MBI-HSS: Maslach Burnout Inventory- Human Services Survey. PWBI: Physician wellbeing index. <sup>†</sup>EE (emotional exhaustion): low (0–16), moderate (17–26) and high (≥27). <sup>‡</sup>PA (personal accomplishments): low (≤31), moderate (32–38) and high (≥39). <sup>§</sup>DP (depersonalization): low (0–6), moderate (7–12) and high (≥13). Mod abbreviates moderate. Pro-Social Behavior – Reaching out and interacting with friends, family, co-residents and faculty. COVID-19 complications – high mortality, communication barriers, prescribing off-label Rx.

A strong majority of trainees successfully managed their stress levels with prosocial behavior, reaching out to family and friends at this time to cope with the situation around them. This strategy was consistent between trainees who qualified as burned out and those who did not. These trainees reported team building events (ie: community meals in the hospital, "Recharge Rooms," and exercising together outside the hospital) to be a significant source of increased morale. Prosocial behaviors serve as protective measures for trainees by safeguarding and nurturing togetherness. Building comradery should be a focal point of any set of future initiatives in preventing burnout, as it was the most successful and consistent coping strategy employed by the trainees.

The free responses also revealed notable hospital initiatives that yielded positive stress reduction on the trainees. Again, this was consistent between both burned out trainees and non-burned out trainees. They included: Increasing hospital transparency with daily broadcasted emails including status updates about PPE, providing financial bonuses in the form of hazard pay, promoting health and wellness through free exercise classes, and designing "Recharge Rooms" stocked with snacks and dedicated quiet spaces that sought to give employees a peaceful break from their duties. Residency specific initiatives that yielded similar positive stress reductions included: Increasing time between duty days to allow for more time to rest at home, and offering extra individual and group psychotherapy sessions as needed with the Psychologists from the Acute Rehabilitation floors. Ultimately, most trainees desired a strong sense of leadership, open ended communication, and enough time to recoup and recharge in order to cope with the added stress of the pandemic. Implementing any of these measures promotes a highly supportive environment for trainees and could help improve burnout rates.

## 5. Limitations

This study was meant to serve as a preliminary survey on the effects of resident burnout and general wellness at a time of unprecedented stress, and therefore needed to be implemented in a quick and timely manner. This same timeline, however, brought on significant limitations that may have consequences on the survey's generalizability and repeatability to other health care professionals.

First, a large limitation to this study was its size. It measured burnout in only PM&R trainees in a single program, and only about half of the trainees responded to the survey. This was a known limitation throughout the implementation of this study, but overall it was considered more important to capture the cross-sectional information at the peak intensity of the pandemic. The goal was to serve as a preliminary study on the effects of the pandemic on redeployed PM&R trainees specifically, however increasing the time given to fill out surveys, and expanding the surveys to other fields would have yielded a higher number of participants and perhaps more powerful data. Future studies containing comparison surveys involving other fields of medicine would be helpful to gain a global sense of burnout in medicine.

Another large limitation was the timing of the study. Invited participants were given the survey during their time of deployment, and were only given less than one week to fill out the survey before collecting data. This certainly limited the amount of survey responses, but, due to the quickly evolving status of the pandemic, it was considered very important to capture information at the peak intensity of the pandemic on the trainees.

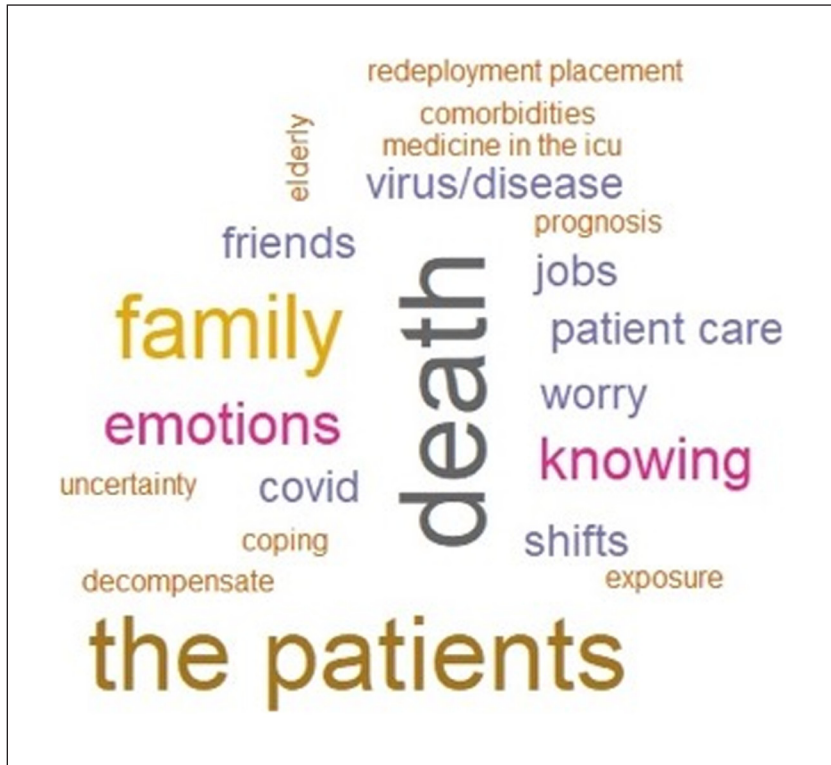
Next, there was no pre-pandemic burnout information from the residency program available to use as a comparison to this study. Having comparison data would help answer the important question if burnout rates seen during this study were consistent with past years or times without a global pandemic. Furthermore, comparison data would be ideal in order to create longitudinal datasets and provide comparison for future studies.

Survey studies have inherent limitations. For example, there is inherent selection bias. Only a percentage of trainees completed the survey and it's possible these persons self-selected for some reason: either because of feeling burnout and wanting help or because of feeling well and having the energy to do the survey. The survey presents emotions and feelings in a moment in time given the experiences respondents have had up to that point. Future studies of this should strive to acquire survey responses at various time points during periods of extreme stress to trainees (such as a pandemic) in order to truly capture the added stress and the mental health of the trainees during said time. Periodic assessments of trainee wellness and burnout should also be considered to establish baseline levels.

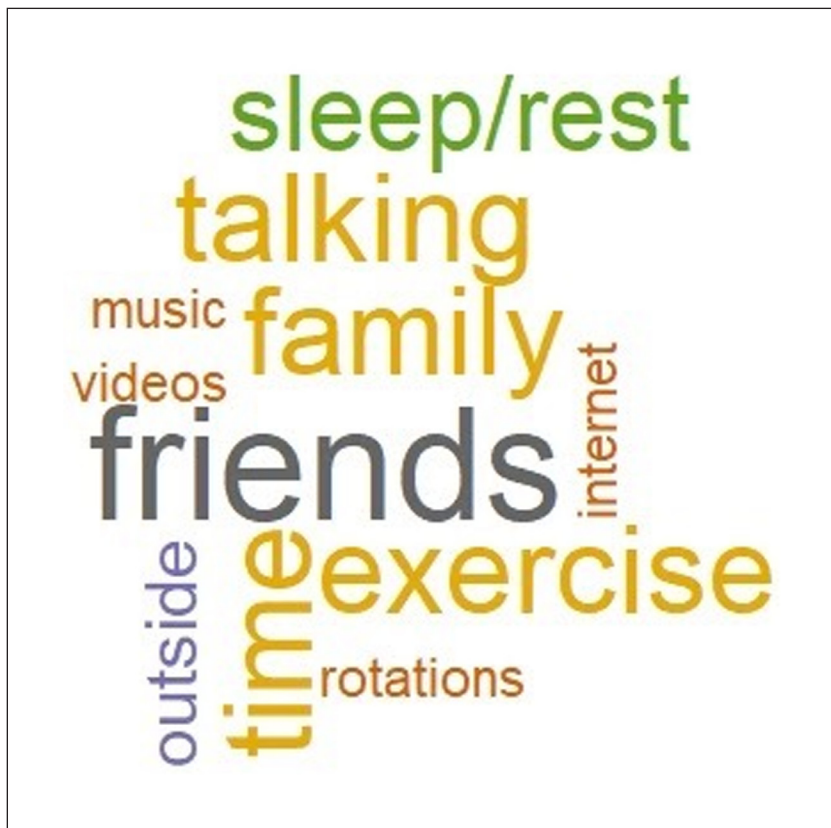
## 6. Conclusion

Residency programs should anticipate burnout during high intensity, high commitment situations such as a pandemic and should prepare accordingly with initiatives and strategies to limit burnout and distress and preserve wellbeing. The shared experience of the COVID-19 pandemic highlighted similar coping mechanisms employed by the trainees who were burned out and those who were not. The most common strategies focused on increasing empathy between fellow trainees, leaning on loved ones for support, and looking towards leadership for direction and encouragement. Regardless of strategy, the trainees displayed courage beyond measure to answer the call when their hospital system and patients needed them most. To support their efforts and unquestionable dedication, administration should prioritize strategies in both safety measures and mental wellness which focuses on these pillars. In doing so would satisfactorily reassure most trainees and could effectively mitigate mental wellness deterioration.

Appendix



**Appendix 1a: Question #2 Word Cloud.** A word cloud summary of the open ended question #2 – “What was most difficult for you, emotionally and physically?”



**Appendix 1b: Question #3 Word Cloud.** A word cloud summary of the open ended question #3 – “What methods did you use to reduce stress and regenerate your energy levels during this time? Were they successful?”

## Abbreviations

Coronavirus Disease 2019 (COVID-19), Personal Protective Equipment (PPE), Physical Medicine and Rehabilitation (PM&R), Physician Well Being Index (PWBI), Maslach Burnout Inventory-Human Services Survey (MBI-HSS), quality of life (QOL), Emotional Exhaustion (EE), Depersonalization (DP), Personal Accomplishment (PA).

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## Competing Interests

The authors have no competing interests to declare.

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