

Effects of the COVID-19 Crisis on Resident Well-Being in a Community Teaching Hospital

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Objectives: The coronavirus disease 2019 (COVID-19) pandemic has been an unexpected crisis that continues to challenge the medical community at large. Healthcare environments have been forced to change dramatically, including for medical residents, who are vital members of the innovative emergency response teams. Articles have previously been published on the effects of crises on the well-being of healthcare practitioners; however, there is a paucity of literature targeting medical residents' experiences and general wellness during devastating events. The objective of our study aimed at understanding the emotional impact of the COVID-19 pandemic on residents' stress, academics, and support systems.

Methods: An anonymous, voluntary Likert scale questionnaire was sent via SurveyMonkey to Internal Medicine and Family Medicine residents in July 2020. Questions focused on residents' mood; stress levels; sense of support; and academics before, during, and immediately after the first surge of COVID-19 at our hospital between March 13 and June 15, 2020.

Results: Residents felt sad, stressed, and overworked during the first wave, as opposed to feelings of neutrality and happiness before and immediately after. Levels of concern for personal and loved ones' safety were significantly increased during and after our first wave. The impact on educational training was rated as neutral. Residents noted that institutional support could be improved by the provision of wellness activities and sponsored social events.

Conclusions: This study provides insight on resident well-being during the initial months of the pandemic and identifies areas that could be improved. Our results demonstrated that the pandemic affected many aspects of residents' well-being and education, and the lessons learned can help guide healthcare institutions when implementing wellness activities for trainees during subsequent crises.

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Although the coronavirus disease 2019 (COVID-19) pandemic has dramatically changed the lives of all individuals around the globe, healthcare workers have been particularly challenged. There are several studies on the impact of devastating events, such as mass casualties and epidemics, especially on healthcare practitioners.^{1–4} Previous published literature has assessed stressors during crises, including a comprehensive analysis of healthcare workers' emotions, perceived stressors, and coping strategies during the first surge of COVID-19. There is, however, sparse literature published on the effects of such crises on resident physician well-being.^{4–6} The strain of the COVID-19 pandemic on the US healthcare system in early 2020, along with government shutdowns, further complicated the welfare of physicians-in-training, who are particularly vulnerable to mental and physical exhaustion.^{7,8} As the COVID-19 pandemic continues, residents are being deployed as essential workers, thus potentially exacerbating the high burnout rates that were present even before the pandemic started.^{9,10} Ensuring safety, combating social isolation, and evaluating the impact on current and future educational opportunities are of paramount importance for residents.^{11–13}

The first COVID-19 surge occurred at our community-based teaching hospital between March 13 and June 15, 2020. Located 30 mi from New York City, the city of Stamford became the epicenter of the COVID-19 pandemic in the state of Connecticut.

Key Points

- Data were obtained through an anonymous, voluntary survey sent to Internal and Family Medicine residents working on our frontlines.
- The coronavirus disease 2019 pandemic affected residents' general well-being, and statistically significant changes were observed when comparing the periods before, during, and after the first surge of critically ill patients at our hospital.
- Resident-reported challenges and future opportunities in promoting well-being were identified. These results can assist residency programs as well as institutions on current issues and services to assemble novel resources and methods to support resident welfare during stressful times.

The hospital established three additional temporary intensive care units, expanded two additional intermediate care units, and doubled occupancy in two of the General Medical floors. During this time, a Joint Military Task Force consisting of the National Guard, US Army, and Reserve Corps worked alongside our physicians and nursing staff. Residents were heavily engaged on the front lines, caring for the surge of critically ill COVID-19 patients.

In addition, all of the residency programs were placed on an Accreditation Council for Graduate Medical Education “stage-3 pandemic crisis” from March to May 2020.^{8,14} As a result, the academics and clinical rotations of the residents were directly affected. During this time of crisis, the residency programs were immediately reorganized so that the trainees could be deployed to areas of the hospital experiencing high demand.

We hypothesized that the COVID-19 pandemic significantly affected residents’ mood, stress levels, workload, sense of support, and academics. We aimed to evaluate these facets of resident well-being surrounding the first COVID-19 pandemic surge and seek out opportunities for improvement in promoting resident well-being.

Methods

Study Instrument

After institutional review board approval, the authors used a 12-item questionnaire, including 5-point Likert scale multiple-choice questions (Supplemental Digital Content, <http://links.lww.com/SMJ/A290>). Questions addressed demographic information and pertinent issues, including stress level; sense of support; wellness sessions; and academics before, during, and after the initial COVID-19 wave at our institution.

The level of support from various resources, as well as the effect of the pandemic on resident education was additionally assessed. Wellness session(s) and activity interest were evaluated using multiple response questions regarding specific wellness topics or activities, such as personal time, online yoga, virtual socialization, and presentations. Respondents were given a list of suggestions and allowed to select all that applied.

Study Procedures

Our hospital has a total of four residency programs: Internal Medicine (IM), Family Medicine (FM), Obstetrics and Gynecology, and General Surgery. IM and FM residents are approximately 56% of the total residents at our institution. A survey was distributed anonymously in July 2020 to only IM and FM residents to capture those residents who were working mainly on the frontlines. An online survey software system (SurveyMonkey, Palo Alto, CA) was used. Participants were allotted 4 weeks to complete the survey. Deidentified data were collected into a secure database, and subsequently coded. Descriptive analyses were performed, presenting counts, and percentages for categorical variables, whereas mean values and standard deviations (SDs) were presented for continuous variables. The χ^2 tests were used to assess the associations

between variables of interest. To assess 5-point Likert scale mean rank scores (ordinal variables) at three time points (before, during, and after the surge), the Friedman test was used. Omnibus tests for statistical significance were then analyzed by Wilcoxon signed rank tests across all three time period combinations. A global *P* value of 0.05 was used to assess all of the tests for statistical significance, and there were no corrections applied for multiple comparisons. All of the analyses were performed using SPSS version 25 (IBM SPSS Statistics, Armonk, NY).

Results

A total of 18 out of 19 IM residents and 9 out of 15 FM residents completed the survey. Given that the study yielded a total response rate of 80% (27 out of 34 residents), the sample is representative of the IM and FM residencies. Respondents were primarily IM residents (66.7%), female (78%), and married (59%) (Table 1). Residents’ mood, stress, and workload levels were significantly affected throughout the first COVID-19 surge at our institution ($P \leq 0.001$; Table 2). Levels of concern for personal and loved ones’ safety were significantly increased from before the peak to both during and after ($P \leq 0.001$; Table 2). All of the residents surveyed requested more social events to occur during the year. In addition, 52% were interested in general wellness sessions, 48% were interested in finance management, and 33% were interested in resources on how to be happy during residency (Table 3). Residents felt most supported by family and friends (mean 4.15, SD 0.77), co-residents in their residency program (mean 3.67, SD 1.00), and residents from other residency programs at our institution (mean 3.33, SD 1.11) (Table 4). Furthermore, 66% believed that the pandemic had either a neutral or positive impact on their learning.

Discussion

Residency is well known to represent a challenging period of training, and our results identified aspects of resident well-being that were transiently affected by the COVID-19 pandemic surge, as well as concerns that have persisted. Previous studies have shown that resident physicians have been affected by COVID-19 through direct infection, quarantine, or redeployment.^{15,16} Below is an in-depth analysis of each facet of resident well-being that was analyzed.

Mood

Residents felt sad, stressed, and overworked during the first COVID-19 surge, whereas they reported being in a neutral mood before and after the initial surge at our hospital. Upon further analysis, residents’ mood after the first surge improved, but did not return to reported presurge baseline levels. Continued high COVID-19 caseloads as well as lack of return to normalcy may explain the elevated rates of concern and lower mood states among residents as shown in previous literature.^{17,18}

Table 1. Demographic profile of survey respondents compared with total resident population

Variable	Category	Respondents (n)	Total respondents, %	Total population, n	Total population, %
Residency department	Internal Medicine	18	66.7	19	58.0
	Family Medicine	9	33.3	15	42.0
Gender	Male	6	22.2	10	29.0
	Female	21	77.8	24	72.0
	Other	0	0.0	0	0.0
Postgraduate year	1	10	37.1	12	35.3
	2	8	29.6	10	29.4
	3	9	33.3	12	35.3
Marital status	Single	11	40.7	13	38.2
	Married/partner	16	59.3	21	61.8
	Divorced/widowed/separated	0	0.0	0	0.0

Distribution of select demographic variables among survey respondents compared with the total Internal Medicine and Family Medicine resident population.

Concern for Safety

After the first pandemic surge ended, although some parameters of residents' well-being improved, concern for personal and loved ones' safety remained elevated. This is likely because of continued pandemic-related fears surrounding this novel, highly contagious illness, as well as uncertainty about the pandemic's future course, as shown in previous studies.^{15,16}

Because of the increased volume of patients presenting with COVID-19 infection between March and June 2020, additional COVID-19 care units were established, thereby changing the residents' schedules dramatically to assist in staffing these additional units. This inevitably put the residents at increased physical and mental health risk, a trend that has been reported previously in the literature.^{6,8,15}

Education

With respect to educational curriculum, our residency programs were challenged to adapt to a modified program that prioritized residents' safety and resource distribution. Some residents agreed that COVID-19 positively affected their education. One explanation, supported by a previous study, is that an increase in the amount of time spent dedicated to online didactics was a

positive consequence of the pandemic.¹⁶ Alternatively, the educational benefit may be the result of residents learning to treat a novel illness and to manage extremely sick patients in a high pressure, fast-paced environment.

Sense of Support

It is commonly accepted that a strong support system can improve an individual's resilience and well-being among learners.¹⁸ When surveyed about their sense of support, our residents reported receiving the most support from their family and friends during the first surge of the pandemic. At our hospital, the IM and FM residency programs have a small number of residents who worked very closely together and the feeling of camaraderie among trainees is well known. Conversely, residents felt least supported by the hospital during this time. Although there were many resources made available for the hospital staff, the residents did not believe that they were fully able to use these resources for a variety of reasons. For example, when meals were generously provided by the community, they were often allocated to a certain floor or unit. Because the residents were not typically assigned to one unit or floor in the hospital, there was confusion as to whether they were included in this meal distribution. This contributed to a pervasive feeling of inequity in their perception of hospital support.

Table 2. Mean and SDs by time period

Variable	Preperiod		During		Postperiod		P		
	Mean	SD	Mean	SD	Mean	SD	Before vs during	Before vs after	During vs after
Mood	3.41	0.84	2.44	0.89	3.15	1.17	<0.001	0.001	0.004
Stress	2.70	0.54	1.59	0.57	2.93	0.83	<0.001	0.109	<0.001
Workload	2.74	0.66	1.81	0.74	2.85	0.72	<0.001	0.448	<0.001
Personal safety	3.67	1.00	1.81	0.92	2.78	0.70	<0.001	<0.001	<0.001
Loved ones' safety	3.19	1.27	1.52	0.64	2.07	0.87	<0.001	0.001	0.004

Residents' reported safety concerns and well-being before, during, and after the first coronavirus disease 2019 surge, presented as means and SDs. When compared with before the coronavirus disease 2019 surge, there were significant increases in concern for safety and decreases in well-being reported by resident respondents. SD, standard deviation.

Table 3. Resident wellness preferred activities assessed via multiple-response questions

Question	Topic	Count	%
The wellness presentation topics I would be most interested in learning about would be (select all that apply)	Burnout and how to prevent it	8	29.6
	Mindfulness	6	22.2
	Developing a personal wellness action plan	7	25.9
	Finance management	13	48.1
	How to be happy in residency	9	33.3
	Resources for residents/best upon request services	14	51.9
	Other	4	14.8
What wellness activities should the residency program organize or sponsor during the year?	A few resident social events each year	27	100
	Incorporate 20–30 min of a wellness activity every week or periodically	6	22.2
	Voluntary presentations and/or courses on wellness topics such as mindfulness, yoga	2	7.4
During the COVID-19 crisis, I would have appreciated the following residency sponsored wellness sessions	Other	3	11.1
	Get out early to do ... Groceries, etc	23	85.2
	Have an online guided meditation session	4	14.8
	Have 20–30 min for online socialization	7	25.9
	Do 20–30 min of online yoga	10	37
	Other	2	7.4

COVID-19, coronavirus disease 2019.

Residents indicated that institutional support would be beneficial by way of presentations, wellness activities, and crisis support.

Previous research on resident support services during the early pandemic concluded that the most helpful services provided included discounts on meals, mentorship, and counseling services.⁷ However, almost half of the study respondents perceived that these support programs were not adequately helpful in reducing their stress and burnout, with our study finding similar results. Successful, evidence-based support interventions for medical residents are still in their infancy despite wellness efforts being amplified during the last few years. Residents' emotional health and initiatives to improve their well-being should be studied further because they are continuing to report poor mood and morale as the pandemic persists.^{6,8,16}

Opportunities for Improvement

Wellness ideas suggested by residents included increased institutional support, quarterly wellness sessions, sponsored social events, online gatherings, and allotted extra free time to complete personal tasks. These results are meaningful because they propose potential events that can be implemented by the administration that will not only positively affect the residents' training but also could improve their quality of life during these uncertain and stressful times.

Almost 50% of residents indicated that they would like to learn more about financial management. Previous studies on residents' well-being have found similar outcomes, including a study on the impact of COVID-19 on pediatric resident well-being, which showed that 11% of their residents reported food insecurity and financial strain related to the pandemic.⁸ In addition, a systematic review and meta-analysis of 48 studies on factors associated with physician trainee burnout and stress reported that residents who were worried about their finances were more

likely to have burnout and stress symptoms.¹⁹ Our results similarly suggest that even in the midst of a pandemic, residents remained mindful about financial management.

Study Strengths and Limitations

The primary strength of this study is that it is an anonymous voluntary survey, and therefore, the responses obtained likely represent the true opinions and experiences of respondents. Our results can assist residency and hospital leadership when establishing a well-rounded wellness program for their current and future trainees as the pandemic persists.

Our study is not without limitations. Residents were asked to respond to our survey at one point in time so causality cannot be established. The questions were designed by the authors and have not been validated. In addition, only the IM and FM residency

Table 4. Mean and SD levels of support during the COVID-19 pandemic

Variable	Mean	SD
Support from family and friends	4.15	0.77
Support from co-residents in my residency program	3.67	1.00
Support from residents from other residency programs at my hospital	3.33	1.11
Support from nurses and allied staff	3.30	1.10
Support from attendings	3.56	1.05
Support from the residency program	3.33	1.27
Support from the hospital	2.93	1.07

Residents felt most supported by family and friends. COVID-19, coronavirus disease 2019; SD, standard deviation.

programs were included in the present study sample, although these residents were primarily those working on the front lines. The survey was not administered to Obstetrics-Gynecology and Surgery residents because their experiences likely differed from the IM and FM residents. There is a possibility of ascertainment bias, as those who chose to answer the survey may have different experiences and perceptions compared with those who did not answer. The small sample size and possibility of recall bias may limit the generalizability of our results.

Conclusions

The COVID-19 pandemic was a rapid and unexpected crisis that challenged and continues to challenge the medical community at large. This study provides important insights into the challenges experienced by residents during the first wave of the COVID-19 pandemic at an academic community-based hospital. By exploring the complexities of resident well-being during the initial months of the pandemic, we identified potential areas for programmatic improvement and support.

In addition, our results demonstrate that the COVID-19 pandemic affected many aspects of residents' well-being and continues to challenge them during an already fragile training period, as reported in previous literature.^{6,8,20} We also found that a surprising by-product of the pandemic was a reported positive impact on residents' education. Working on the front lines and caring for COVID-19 patients during this major historic event may have enriched the residents' clinical and academic training.

Importantly, this study may help guide the implementation of resident wellness programs during this pandemic and subsequent upheavals. Gaining an understanding of the COVID-19 pandemic's effect on residents can provide leaders in graduate medical education with information to assemble resources and approaches to support resident welfare during stressful times.²¹ More studies are warranted as the impact of COVID-19 is an ongoing issue, and novel interventions for improving burnout and well-being in residents are essential.

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