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### Short Communication

### Medical Education Gone Viral During the COVID-19 Pandemic

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Education and medical training were impacted heavily by the COVID-19 pandemic. Exposed to stress and burnout, many trainees, including medical students and residents, exhibited psychiatric symptoms, such as anxiety, depression, and suicidal ideation. In contrast, others were asymptomatic. A better understanding of clinical variability among medical trainees exposed to overwhelming stress could be helpful for planning and navigating future emergencies.

To elucidate the role of vulnerability and resilience of young medical students and residents during the COVID-19 pandemic, we conducted a pilot study, by psychiatric interview of both symptomatic and asymptomatic students and residents from three Southern California universities.

In general, the trainees who harbored second thoughts about their suitability for medical profession exhibited more symptoms of mental distress compared to the students and residents who believed they were "meant" to be physicians.

We concluded that unless addressed, doubts about the practice of medicine may predispose to psychiatric distress during crisis situations. Conversely, problem identification and early treatment may mitigate the emergence of psychiatric symptoms.

Our pilot study is in line with larger studies that looked at preexisting emotional distress as a deterrent for adequate response during disasters.

### Introduction

Teaching medical students and residents during the COVID-19 pandemic was challenging and unpredictable. Reactivated preexistent trauma, conflicts and struggles superimposed with lockdowns, loss of freedom, and fear, engendered a unique mix of inner and outer environmental factors that could predispose to pathology.

The mental health burden during the pandemic was often manifested by anticipatory anxiety and stress derived from witnessing sickness and death, increased work commitments, isolation and economic stressors. Moreover, disruptions, such as school closures, loss of friends and family, economic hardship, and decreased healthcare access, gradually took a toll on the mental health of young people enrolled in schools and universities throughout America. Along this line, a recent study looked at mental health disorders and suicidality of young people during the pandemic, identified isolation and reduced contact with family as potential drivers of psychopathology<sup>[1]</sup>.

Between 2020 and 2022, we interviewed 63 residents from three medical schools in Southern California, screening for early signs of anxiety, depression and suicidal ideation. When symptoms were detected, brief, two or three sessions, supportive therapy was provided.

We found19 individuals who endorsed depressed mood with impaired concentration or attention; 21 individuals endorsed poor-quality sleep; 7 low energy, and 3 suicidal preoccupations. Several individuals exhibited more than one symptom and were given more intensive interventions. Although in several individuals, the symptoms overlapped, close to 50% of students and residents endorsed anxiety, stress, or depression. Although our study lacked a control group, the results were comparable to the earlier, larger studies, highlighting the fact that lockdowns had a negative impact on about half of medical trainees<sup>[2]</sup>. In addition, early symptom detection and brief supportive therapy mitigated progression and further complications of psychiatric conditions.

### Vulnerabilities and Resilience in medical trainees during the COVID-19 pandemic

Vulnerability and resilience among medical students and residents during the COVID-19 pandemic have been examined by several studies, attempting to identify major risk factors and mitigate consequences<sup>[3][4][5]</sup>.

Preexistent anxiety, depression, and stress due to the uncertainty, fear of infection, and overwhelming workload, changes to rotations, online learning, and limited hands-on experience, created challenges. On the other hand, resilience was enhanced by the connection with colleagues who provided emotional support and a sense of camaraderie that was helpull in coping with stress<sup>[6]</sup>.

Many students and residents demonstrated flexibility in adjusting to new learning modalities and work environments. These individuals reported engagement in mindfulness, exercise, and other stress-managing strategies.

A strong commitment to patient care and public health fostered resilience, motivating students and residents to carry on despite hardship.

# Medical education in the time of COVID

Medical education in California during the COVID-19 pandemic faced significant challenges as many medical schools transitioned to online classes, seminars, and assessments to accommodate social distancing guidelines. Basically, all in-person training, including clerkships, medical school rotations, small group sessions, and traditional didactic forums, were suspended in the early part of the pandemic<sup>[7][8]</sup>.

Many programs. Including University of California at Riverside, modified curricula to include topics related to infectious diseases, public health, and emergency response, ensuring that students and residents gained relevant knowledge about numerous situations that can arise during the pandemic.

Trainees faced interruptions in their clinical rotations due to restrictions on hospital visits and concerns for safety. Many had to adapt their learning through virtual patient interactions. Intriguingly, the pandemic accelerated the incorporation of telemedicine into medical curricula, training students on how to conduct virtual consultations and use related technologies.

The stress and isolation caused by the pandemic highlighted the need for enhanced mental health resources for medical students. In this regard, schools increased access to counseling and support services on the main campus and the rotation sites<sup>[9]</sup>. These locations, managed by site directors were "the eyes of the residency director" away from the main campus  $\frac{[10]}{10}$ . For example, the site director and administrators across the UC system worked under the guidelines influenced by state executive orders to manage the pandemic impact. These included: adapting curricula and teaching methods for online instruction, providing support services, including mental health resources and academic advising, to help students navigate the challenges posed by the pandemic. In addition, site directors were responsible for communicating rapidly the policy updates to faculty, staff, and students on safety protocols and academic adjustments<sup>[11]</sup>.

# Psychiatric research during the COVID-19 pandemic

Psychiatric research during the COVID-19 pandemic addressed a wide range of mental health issues brought on or exacerbated by the pandemic. These areas included the impact of isolation and lockdowns, on trainees' mental health, impact on children and adolescence, substance use, introduction of telehealth, and identification of vulnerable populations<sup>[12]</sup>.

Social isolation during the pandemic was associated with anxiety and various degrees of depression. Healthcare workers, including medical trainees, often experienced burnout, depression and PTSD from dealing with high mortality rates and overwhelming patient loads<sup>[13]</sup>.

The pandemic accelerated the adoption of telehealth for mental health services and research has been conducted on the effectiveness and accessibility of remote therapy sessions and their long-term implications for mental health treatment<sup>[14]</sup>.

Studies have shown changes in substance use patterns during the pandemic, including increased alcohol consumption and use of illicit drugs. Research has focused on the implications of these changes for mental health<sup>[15]</sup>. Studies of student/resident performance during the COVID-19 pandemic showed that stress and anxiety due to school closured and online learning often lowered school performance and increased substance use, especially tobacco and alcohol, that in return lowered school performance further<sup>[16][17]</sup>.

There has been research into the psychological impact of long COVID, with many patients, including students and residents, reporting ongoing mental health issues such as anxiety, depression, and cognitive dysfunction<sup>[18]</sup>.

The pandemic has affected disproportionately certain populations, such as those with pre-existing mental health conditions, low-income communities, and racial and ethnic minorities. Research has been conducted to better understand these disparities and how to address them promptly.

Several studies have explored various coping strategies that individuals and communities have adopted during the pandemic, including resilience factors and community support systems.

Overall, psychiatric research during COVID-19 has highlighted the urgent need for comprehensive mental health support systems, especially for medical students and residents, at risk of developing depression, PTSD, and burnout.

### Discussion and future directions

Local or National emergencies almost always impact education in general and medical education in special as young physicians are among the first responders in emergencies, including communicable diseases.

During crisis, medical schools should prioritize mental health support services and integrate wellness programs into medical training. Adapt teaching methods for varied learning environments to address educational gaps. Prevent social isolation by encouraging peer support networks that can help students and residents feel more connected.

Signs of burnout and stress should be identified early, and therapy initiated. Vulnerability and resilience factors should be identified to support medical trainees as they navigate both the educational challenges and the impact of crises.

### Conclusion

Medical training during the COVID-19 pandemic was challenging both at the societal and individual level. In the case of medical students and residents, this international catastrophe highlighted personal attitudes about medical profession and readiness/willingness to serve.

At the societal level, the pandemic revealed that changes in teaching methodology can be accomplished quicky and effectively. Overall, the pandemic emphasized the societal and personal adaptation and their limits, contributing valuable lessons for future crises.

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#### Declarations

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