

# Psychological stress among anesthesia residents during COVID-19 pandemic and how to mitigate them

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## Abstract

The impact of the novel coronavirus disease 19 (COVID-19) has overburdened the anesthesia fraternity both physically and mentally. The academic and training schedule of the medical residents in the last year was also disrupted. Since we are in the early phase of the second peak of the COVID-19 pandemic, it is time to reconsider the causes of stress in anesthesia residents and methods to mitigate them. In this non-systematic review, authors have included articles from PubMed, Medline, and Google scholar with keywords “identify strategies” “preventing and treating psychological disorders,” and “medical students” from year 2010 onwards were included. Apart from these keywords, we have included the coping strategies and early psychiatric consultation methods. This review article aims at early identification, workplace environment changes, and implementation of early coping strategies in anesthesia residents during this second peak of COVID-19.

**Keywords:** Anxiety, burnout, COVID-19, post-traumatic stress disorder, stress

## Introduction

In December 2019, an outbreak of novel coronavirus disease 19 (COVID-19) hit Wuhan, China and in no time, it was declared by the World Health Organization (WHO) as a global pandemic on 11 March 2020. The challenges faced by anesthesia residents during last one year were substantially greater than those encountered in their normal work. Being in the forefront, it is natural to relate to fear as they understand the spread better.<sup>[1]</sup> Challenges range from negative emotions, depletion of personal protection equipment, lack of specific drugs, and feelings of being inadequately supported in workplace add to the mental burden of the health care workers.<sup>[2]</sup> Now, with a better understanding of the COVID-19 and its medical problems, it is very important to identify psychological signs and symptoms and mitigate them at the earliest.<sup>[3]</sup> In this non-systematic review,

authors have included articles from PubMed, Medline, and Google scholar with keywords “identify strategies” “preventing and treating psychological disorders,” and “medical students” from year 2010 onwards. The article also includes coping strategies and early psychiatric consultation. Implementation of these suggested mitigation strategies may help residents and senior members of anesthesia for early identification, workplace environment changes, and coping strategies to support residents during this early phase of second peak of COVID-19.

## Challenges Faced by Anesthesia Residents and Possible Causes Due to of COVID-19 Pandemic

### Mental health of residents [Figure 1]

The pandemic all of a sudden produced an undue pressure over the health care workers, especially the anesthesia

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residents, due to the high risk of contacting COVID-19 infection during tracheal intubation and ventilatory care.<sup>[4]</sup> On average, the prevalence of depressive symptoms among medical students has been reported to be 27.2% (9.3–55.9%) and suicidal ideation in up to 11.1% (7.4–24.2%) during medical school.<sup>[5]</sup> Suicidal attempts were reported higher in students reporting either 1-2 stressful events including multiracial students, having sexual minorities like bisexual or transgender.<sup>[6]</sup> One of the major triggering factors for suicidal attempt found was inter-personal relationship conflicts. The other triggering factors were mental illness in the form of delusions, hallucinations, and lack of improvement despite medications.<sup>[7]</sup> An individualized web-based screening approach is a promising strategy to identify students at high risk for suicidal thoughts and behaviors during their academic career.<sup>[8]</sup>

Medical institutions should assign a tutor or a senior faculty so that the medical students can raise their mental health issues through a proper channel. Depressive disorder is considered as just one among them. Several other conditions like anxiety, burnout and related issues are notified through studies by the medical students. Hence, even though the students are aware of their condition, the number of students seeking help is minimal and early identification is helpful to tackle this condition. Studies report a 6-staged processed model, i.e. from stage 0 to 5. This stage model starts from prevention phase to re-integration phase and the students can enter any of the phase according to their mental health status.<sup>[9]</sup>

During the severe acute respiratory syndrome (SARS) outbreak of 2003, up to 50% of healthcare workers experienced posttraumatic stress (PTSS).<sup>[10]</sup> PTSS has been observed in up to 7% of 285 residents in the acute phase of the study and was expected to increase with the progress of the pandemic.<sup>[11]</sup> In a systematic review, authors reported that organizational

and social support, clear communication, and developing a sense of control were protective factors in mitigating adverse mental health outcomes among health-care workers during epidemic.<sup>[3]</sup> Hence, identifying and empathizing with residents can reduce the stress and to some extent the miscalculated severe cases of mental disease due to stress and burnout [Table 1].

### Effect of pandemic on academics and training

1. Working hours: The anesthesia residents are being subjected to work in both COVID and non-COVID areas. During COVID duty, hours are being shortened to decrease the risk of exposure but in non-COVID area duty areas, the timings have been increased to restrict the number of people working to reduce many teams coming in contact.<sup>[12]</sup>
2. Skill and training opportunities: Anesthesia residents are exposed to aerosol-generating procedures like bag and mask ventilation, tracheal intubation, suctioning, and percutaneous dilatational tracheostomy. However, nebulization in COVID areas is not permitted and closed system suctioning is practiced to reduce aerosol generation. Video laryngoscope is not available in all areas for tracheal intubation. Moreover, to maintain safety, the most experienced anesthesiologist performs the procedure leading to reduced opportunities for recently entered anesthesia residents for training. Residents report that reduced caseload, sub-specialty experience, and supervised procedures in non COVID are impairing their learning and hands-on training. Online teaching and training are a somewhat poor substitute for simulators and supervised procedures performed on patients.<sup>[13]</sup> The facility of simulators is not easily available in all training centers.
3. Evaluation and grading: Cancelled educational activities, postponed examinations, and altered rotations threaten progression through training. Online tools have been used for subjective assessment of the knowledge of residents. The delay/postponement leads to anxiety among the residents as they must undergo extensions of training period and financial commitment.<sup>[13]</sup>
4. Academic conferences and paper presentations: Medical meetings and conferences are considered as a part of curriculum in medical training program. Unfortunately, the pandemic is stressing physical and social distancing; hence, we have to rely on recorded lectures and webinars to get updated. Paper presentations and research publications have come into a halt due to the acute health crisis. Therefore, the quality of the training period is affected which is adding up to the mental stress to the residents.<sup>[14,15]</sup>

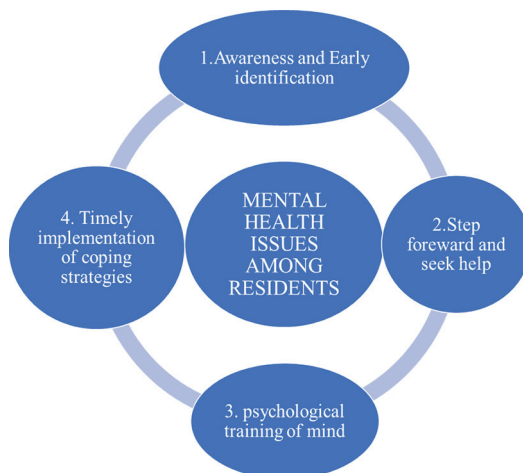


Figure 1: Stepwise approach to deal with mental stress-related issues

**Table 1: Challenges faced by anesthesia residents and possible causes due to of COVID-19 pandemic**

Challenges of Anesthesia residents	Possible causes
Mental health of residents	High-risk of contacting COVID-19 infection Prevalence of depressive symptoms Multifactorial causes for suicidal thoughts Anxiety, burnout and related issues
Effect of pandemic on academics and training	Increased average number of working hours per week for residents due to work in both COVID and non-COVID areas. Diminishing experience gained by the trainee and opportunity to be signed off for a workplace-based assessment. Reduced clinical experience, caseload, and sub-specialty experience Evaluation and grading: Cancelled educational activities, postponed examinations. Academic conferences and paper presentations: Paper presentations and research publications are reduced and only online options are available.
Measure psychological and mental stress among residents	Depression anxiety stress scale (DASS) The Impact of Event Scale-Revised (IES-R) General Health Questionnaire (GHQ)-12 Sense of Coherence (SOC)

### How to measure psychological and mental stress among residents

Objective assessment methods for measuring psychological and mental stress among residents.

1. Depression anxiety stress scale (DASS) has been improvised into DASS-21 which comprises 21 items. This helps in measuring anxiety, depression, stress, and posttraumatic stress disorder (PTSD) independently. It consists of 7 items per subscale and each subscale with a score ranging from 0 to 3. The sum is made by adding up the scores of each subscale and multiplying it with the factor of 2. The total DASS score ranges from 0–120 and the DASS subscale score ranges from 0–42. The cut-off score for DASS total is 60 and for depression subscale is 21.<sup>[15]</sup>
2. The Impact of Event Scale-Revised (IES-R) is another scale used for objective assessment. It is a 22-item scale rated from 0–4. It has three subscales reflecting intrusion, avoidance, and hyperarousal which comprise 8, 8, and 6 items, respectively. This scale was targeting mainly to differentiate people with or without diagnosed PTSD.<sup>[16]</sup> It has good psychometric properties as well.

### Methods to Mitigate the Challenges Faced by Anesthesia Residents During COVID-19 Pandemic

#### Coping techniques for anesthesia residents

1. *Focus group discussions*: This involves class content developed both from literature and complaints from students in the focus group at the beginning of the semester.<sup>[17,18]</sup> The focus groups better understand the specific context of the students including perceptions, belief, values, attitudes, and social representations.

Strategies like “group therapy” are likely to be beneficial for those who are highly stressed due to the working environment. Group therapy helps an individual to acknowledge that it is not he/she alone who is having any psychological problem and that there are others like him/her. In addition, while in such a therapy, the participants are able to exchange ideas with each other, including sharing effective coping strategies.<sup>[18]</sup> Coping strategies included respecting one’s limits, setting priorities, avoid comparisons, and involving leisure activities.<sup>[19]</sup>

2. *Trainer-trainee teaching and e-learning*: A multimodal approach can be used for the well-being of the physician as well as the medical trainee in this pandemic era of physical and social distancing [Table 2]. This can be in the form of a large group of virtual communication forums, weekly check-ins of the faculty-trainee systems, peer-support systems, prioritizing family connections, and encouraging positive healthy habits like daily exercises, debriefing, rest, etc., This can be addressed by creating spaces for both faculties and trainees to share their personal issues that threaten their well-being.<sup>[20]</sup>
3. *Personal habits and sleep hygiene*: Most of the residents suffering from psychological disorders are sleep deprived. Residents with lesser physical activities are more prone to develop sleep disorders and insomnia. Physical exercise triggers the release of serotonin, noradrenaline, dopamine, and endorphins which will create a euphoric state of mind. Hence, their sleep quality stress coping skills can be improved by “active physical exercises.”<sup>[19]</sup>
4. *Psychological training of mind*: This can be achieved by conducting elective courses aimed at “Strategies of coping with Professional stress” to student’s academic life. In a published study, objective questions were asked about the perception of stress at the beginning and end

**Table 2: Methods to mitigate the challenges faced by anesthesia residents during COVID-19 pandemic**

Methods to mitigate	Possible methods
Coping techniques	Focus group discussions Trainer-trainee teaching and e-learning Personal habits and sleep hygiene Psychological training of mind
Role of Working environment on coping of mental health issues of residents	Active and timely identification of their issues Adequate provision of resources to health care workers in the form of personnel protection equipment Triage guidelines for managing patients Training and recruitment of additional staffs Regular scheduled breaks for the residents Regular screening of the residents and other health staffs An action plan at institutional level to support the residents working under COVID-19 team
Treatment modalities and Psychiatric consultation and start early	Screening for psychological problems Sense of Coherence (SOC) Organizational and social support Consultation-liaison with mental health professionals

of the course, the use of coping strategies taught, and the perception of the utility of the content. It was reported that 67% of medical students produced fewer symptoms of stress at the end of course; 76% adopted new coping strategies; and 90% considered that this learning activity was useful for identifying stressors and sharing them with colleagues. These types of courses should be included to allow students to express their subjectivity and interact with colleagues, and prophylactic actions should be introduced to alleviate distress inherent in the process of medical education.<sup>[21]</sup>

### Role of working environment on coping of mental health issues of residents

Being a trained and experienced individual, a faculty member will be better able to understand the mental health crisis of their resident in such a situation. The following are likely strategies that may be beneficial for the residents.

1. Regular screening of the residents and other health staffs for their physical and psychological health should be done to introduce early solutions.<sup>[22]</sup>
2. Adequate provision of resources to health care workers in the form of personnel protection equipment (PPE) kits, ventilator and other intensive care unit (ICU) care equipment, beds, and latest research updates about medications etc., should be maintained.
3. Triage and recent guidelines need to be updated for all the residents based on case severity.
4. Regular scheduled breaks for the residents should be given and provision of psychosocial support, mindfulness sessions, and resilience training sessions should be arranged.
5. At institutional level an action plan needs to be created to support the residents working under COVID-19 team. All medical education deadlines can be deferred temporarily to give stress relief to the residents.<sup>[23]</sup>

### Treatment modalities and psychiatric consultation and start early

Psychiatrists commonly use tools like General Health Questionnaire (GHQ)-12 and Sense of Coherence (SOC) “a global orientation of confidence in one’s ability to cope with and overcome stressful and challenging situations in life” for early identification of stress.<sup>[24-26]</sup> Consultation-liaison with mental health professionals is an important component of enhancing the mental health wellbeing of the residents. In the event that there is an imminent threat of anyone developing psychological distress, the mental health professionals could be approached either directly or through the help of a 24 × 7 help-line.

1. Non-pharmacological intervention like relaxation technique is helpful in anxiety disorders and cognitive behavior therapy (CBT) is useful for those with depression. This helps in a self-appreciation of daily life activities and a positive experience about one’s thought and emotions. Other treatment techniques include bio-feedback technique in which signals from one’s own body are used to improve their health. Musical relaxation therapy is also considered as one of the psychological treatment techniques.<sup>[24]</sup>
2. Those with moderate to severe psychological problems may even require the use of psychotropics. Medications are important to alleviate the symptoms and reduce the disabilities as well as prevent relapses. Anti-depressants are prescribed in moderate-severe depression. This helps in increasing the serotonin and norepinephrine levels in brain. Selective serotonin reuptake inhibitors (SSRIs) like fluoxetine, sertraline, and escitalopram have proven efficacy in those with anxiety disorders, depression, etc., For bipolar disorders with frequent maniac episodes, apart from anti-maniac drugs, anti-psychotics are also preferred.
3. Individuals with sleep disorders are advised to practice good “sleep hygiene” like going to bed at the same time

and avoid strenuous activities or mental exertion near bedtime. It is also advised to reduce caffeine intake. For severe insomnia, benzodiazepine is the preferred drug for a shorter period of time (usually for 4 weeks). In patients with generalized anxiety, benzodiazepine may be considered and anti-depressants like SSRIs can be added too if depressive symptoms are present or if a long-term therapy is needed.<sup>[27]</sup>

## Conclusion

During this early phase of second peak of COVID-19 pandemic, addressing stress and burnout with early consultation with experts and advocating effective treatment modalities at the right time will reduce psychological stress among residents.

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## Conflicts of interest

There are no conflicts of interest.

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