RESIDENT'S PUSHED TO THE BRINK: A WAKE-UP CALL TO CHANGE THE HEALTHCARE CURRICULUM

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Abstract

Background: Anesthetists experience a lot of stress on a daily basis and they take charge during a health crisis. Unfortunately, mindfulness and coping strategies are rarely taught during training. With the appearance of the COVID-19 pandemic, some might struggle to cope. Our goal was to uncover the prevalence of moderate-severe anxiety, stress, and depression among anesthesia residents during the crisis.

Methods: This is a cross-sectional study. We sent a questionnaire to the anesthesia residents enrolled in the Saudi Commission for Health Specialties anesthesia residency program in the western region of Saudi Arabia. This questionnaire included demographic data, concerns and coping methods. We also included questionnaires for stress, anxiety and depression.

Results: We achieved a 77% (93 residents) reply rate. Around 25% of the residents had trouble coping. There was a high prevalence of moderate-major stress and depression at 89% and 50% respectively. The biggest concern was contracting the virus (66%), infecting their family members (81.5%), and a delay in graduation as a result of the pandemic (59.8%). There was a statistically significant relationship between living alone and depression.

Conclusions: A health crisis can have a serious impact on psychological well-being of anesthetisia residents. It is essential that they are provided with support services ans well as incorporating well-being training into their curriculum.

Keywords: Anesthesia, curriculum development, mindfulness, resident well-being, pandemic, coping, medical education, COVID-19.

Introduction

From the start of medical school, healthcare workers are constantly exposed to high levels of anxiety and stress. About 50% of American physicians have reported burnout,1 and anesthesiologists are no exception. Their profession involves quick decision making, a stressful working environment, and high expectations with very little gratification and recognition. Depression is

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twice as high among anesthetists as it is in the general population.2 Even during residency, a study by Sun et al. revealed that 51% of anesthesia residents had burnout, 36% had distress, and 12% screened positive for depression.3 These disturbances have been shown to lead to carelessness, lack of commitment, and risky behavior.4 All of this emphasizes the importance of incorporating a mindfulness and resilience curriculum in the training years.

Mindfulness-based stress reduction (MBSR) program for medical schools has been around since 1985.5 Despite that, a study by Dobkin et al. in 2013 revealed that only 14 medical schools actually taught mindfulness. These programs have already shown to reduce negative emotions and stress, and enhance empathy and self-compassion.6 Having support services that help physicians deal with stress and burnout isn't enough. We must try to prevent it by building their resilience, developing their coping strategies, and encouraging self-care.

With the onset of the COVID-19 pandemic, physicians are being asked to increase their productivity. At the same time, they are socially isolated from family and friends to prevent cross-infection. Without the proper skills to deal with the uncertainty, high-stress environment, and poor outcomes, physicians can be pushed to the brink. They become more and more at risk for succumbing to the negative effects of high anxiety and stress with the consequences of not being able to deliver the high-quality healthcare is expected of them.7

This study is a cross-sectional questionnaire-based study conducted to assess the mental well-being and coping strategies of anesthesia residents in the Western Region of Saudi Arabia during the COVID-19 crisis, which was conducted in April 2020. The primary aim of our study was to identify the residents' ability to cope by screening for high levels of stress, and depression and try to uncover the associated risk factors.

Methods

Ethical approval was obtained from the King Abdulaziz University Hospital bimedical ethics committee. The study population were all anesthesia residents enrolled in the Saudi Commission for Health Specialties (SCFHS) Western Region's anesthesia residency program. We excluded residents that were on leave during the pandemic.There are 120 residents actively enrolled in the SCFHS anesthesia program. Of those residents, 45 (35.8%) are female and 75 (62.5%) are male. A survey was generated using Survey Monkey© that comprised of the predeveloped PHQ-9 questionnaire for depression, and the Perceived Stress Scale. An additional 11 demographic questions were added. These 11 questions were developed through a collaborative and iterative process by the research team after reviewing the existing literature for identified risk factors. The survey was sent out electronically on the 15th of April, and the residents were invited to complete the questionnaire voluntarily. The objective and goal of the trial was explained to the participants and we obtained a verbal consent. Participants' names were not included to maintain anonymity.

The PHQ-9 is a nine-item questionnaire used for producing a criteria-based diagnosis of depression. Major depression is diagnosed if five or more of the nine items in the questionnaire have been present for "more than half of the days" for the last two weeks. One of the items must be depressed mood or anhedonia. Other types of depression are diagnosed if 24 depressive symptoms have been present for at least "more than half the days" in the past two weeks, and one of the symptoms is depressed mood or anhedonia.8

The Perceived Stress Scale is a 10-item questionnaire designed to determine how unpredictable, uncontrollable, and overloaded respondents find their lives. It contains four positively stated items and six negatively stated items. The scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the four positively stated items (items 4, 5, 7, & 8) and then summing across all scale items.9 The score ranges from "013" indicate low stress, from "1426" moderate stress and from "2740" high perceived stress."

We included two open-ended questions that asked residents to reflect on their biggest concerns during the crisis. The answers to those questions were analyzed, and common themes were identified.

The results were analyzed using SPSSv21©. The

results of the questionnaires were tallied individually to determine each resident's level of depression, anxiety, and stress. The number of cases was then computed to determine the prevalence of each disorder. Cronbach's alpha was used to determine whether a relationship existed between the demographic variables and the questionnaire's results.

Results

Of the 120 residents actively enrolled in the program, we received 93 responses, which give us a response rate of 77%. Of those, 39% (n=36) were female and 61% (n=57) of the respondents were male. See (Table 1) for the characteristics of respondents. Of the respondents, 20 (22%) had a chronic medical condition that made them more vulnerable to COVID-19, 75 (81%) were living with their family, and 47 (51%) had quarantined themselves. In addition, 15 residents (16 %) had already been in contact with a confirmed COVID-19 patient, and 12 (13%) of those had isolated themselves from their families..

Table 1

Baseline Characteristics of Respondents

Variable	N	%
Gender:		
Male	57	61
Female	36	39
Year of training		
1	21	23
2	23	25
3	20	21
4	15	16
5	14	15
Marital status		
Married	48	52
Single	45	48
Have children		
Yes	33	35
No	60	65
History of anxiety		
Yes	7	8
No	86	93
Risk factor for COVID-19		
Yes	20	22
No	73	78
Living with family	75	81
Isolated themselves from family	47	51

Stress:

Seventy-nine residents (89%) fulfilled the Perceived Stress Scale criteria for moderate to severe stress. A higher percentage of female residents achieved a moderate-severe stress score than males, although it was not statistically significant. Seventy residents (79.5%) scored within the moderate stress range, and nine residents (10%) scored within the severe stress range. We did not find a significant difference when comparing the stress level with other variables (see Table 2).

Depression:

Twenty-nine (33%) of the residents fulfilled the questionnaire's criteria for major depressive disorder. Furthermore, 25 residents (27%) fulfilled the criteria for mild depression, 20 (22%) fulfilled the criteria for moderate depression, and 19 (22%) fulfilled the criteria for moderate-severe depression. We did find a significant increase in moderate-severe depression among residents who lived alone and those who had quarantined themselves (see Table 2). More than half of the residents (58%) who had actually been in contact with a COVID-19 patient had symptoms of moderate to severe depression. The question "Have you had Thoughts that you would be better off dead or of hurting yourself in some way", 17% of the residents have answered "several days", 5% have answered "more than half the days", and 6% have answered "almost every day". Of these residents, 7 lived alone and 6 didn't communicate regularly with their family using online platforms.

Concerns and Coping:

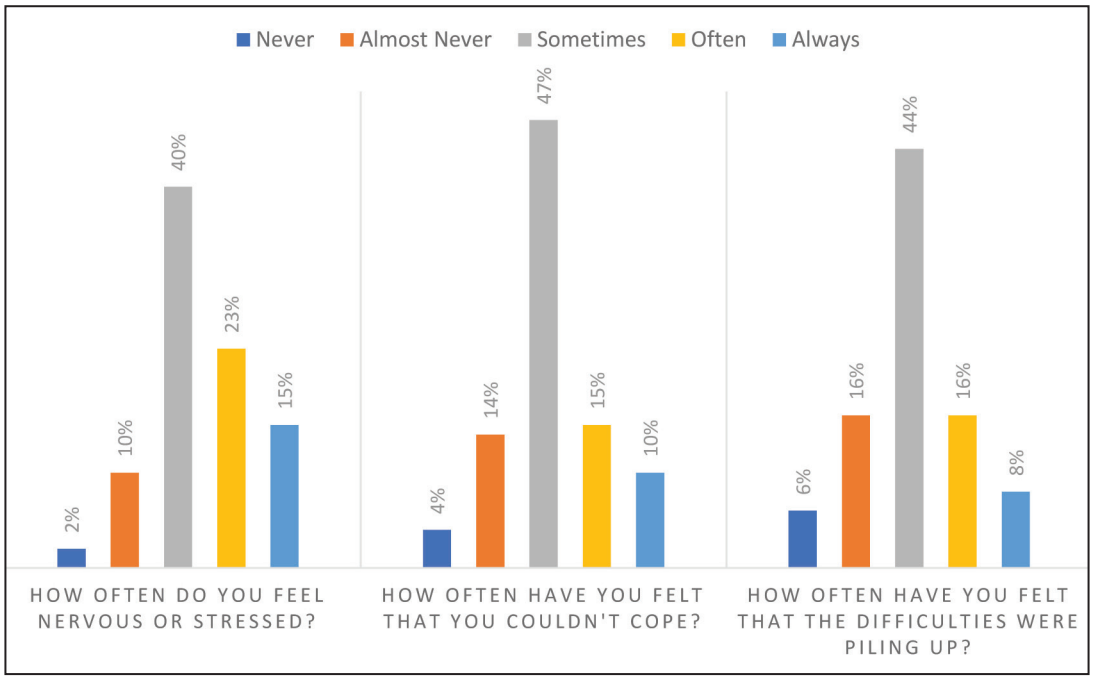
Twenty five percent of the residents were struggling to cope (Figure 1). The most common concerns among the trainees were contracting the virus (66%) or passing the virus on to their families (82%). This was significantly higher among the female and senior residents. About 80% of the residents who

Table 2
The prevalence of Stress and Depression by variable

	n (%)	p-value	n (%)	p-value
	Residents That Had Moderate-Severe Stress (n=79)		Residents That Had Moderate-Severe Depression (n=43)	
Gender				
Male	47(59)	0.6	29 (67)	0.1
Female	32 (41)		14 (33)	
Level of Training				
1	18(23)	0.9	8(19)	0.2
2	21(27)		14(33)	
3	17(22)		7 (16)	
4	10(12)		5(12)	
5	13 (16)		9 (20)	
Marital Status				
Married	39(49)	0.7	19(44)	0.28
Single	40 (51)		24 (56)	
Children				
Yes	27(34)	0.9	13(30)	0.3
No	52(66		30 (70)	
Health Conditions				
Yes	15 (19)	0.3	5 (12)	0.9
No	64 (81)		18 (88)	
Come in contact with COVID-19 patient	14 (18)	0.16	7 (16)	0.017
Yes	65 (82)		16 (84)	
No				
Living with family				
Yes	62 (78)	0.4	30 (70)	0.015
No	17 (22)		13 (30)	
Self-quarantined				
Yes	41 (52)	0.8	27(60)	0.05
No	38 (48)		8 (39)	

We found no difference between the level of stress and other variables. Moderate to severe depression was higher among residents who had come in contact with a COVID-19 patient, living alone and who self-quarintined. *n= Number of residents. (%) is the percentage from that category.

Fig. 1
Level of coping in participating anesthesia residents



The majority of residents felt stressed, inability to cope and having difficulties piling up at lease some of the times.

were worried about getting infected had quarantined themselves. Another concern among the residents (60%) was the academic implications of the COVID-19 crisis and whether or not they would be able to be promoted to the next level of training or even graduate. Many residents (76%) were also concerned about the financial implications of the crisis (see Table 3). In the open-ended questions, common themes in coping where family support 16%, friends 12%, and religion 13%. 55% of residents exercised regularly.

Discussion

This study uncovered a great deficiency in preparing anesthesia trainees in the Western Region of the Kingdom of Saudi Arabia for a health crisis. During the early days of the COVID-19 pandemic, a large number of anesthesia residents had already started to show signs of high stress and depression. In our study, 25% of residents felt that they often couldn't cope, and 21% felt that the difficulties were piling up. Concerningly, 33% of them fulfilled the criteria for major depressive disorder. If left unchecked, they can lead to a detrimental outcome, such as interpersonal relationship difficulties, drugs, alcohol, and even suicide.[10]

The appearance of the COVID-19 crisis has affected trainee's well-being in several ways. Previous studies on anesthesia staff and residents show that major sources of stress are lack of control over work, high demand, overtime, lack of support, and feeling helpless.[11,12] All of these factors certainly increased during the COVID-19 crisis. The pandemic already increased their workload and working hours, endangered their health, isolated them from their families, altered their normal routine, and appeared at the time where most of them were studying for their end-of-the-year exams. Furthermore, in a study by Hayanga et al. (2017), only 17% of residents felt that their program provided them with adequate training for an influenza pandemic and only 50% had emergency preparedness training.[13] There are already many reports of healthcare worker fatigue, anxiety, and burnout during this COVID-19 pandemic.[14,15]

The workplace may not be the only source of stress for residents. They may also be experiencing stress in their personal lives. Indeed, in our own study, we have found that the majority (81.5%) of

Table 3

Residents' Biggest Concerns During the Pandemic in Association with Other Variables:*

	Residents Highly Concerned About Contracting Virus (n=61)		Residents Highly Concerned About Infecting Family (n=75)		Residents Highly Concerned About Finances (n=55)		Residents Highly Concerned About Training (n=70)	
	n (%)	p	n(%)	p	n(%)	p	n (%)	p
Gender								
Male	32 (57)	0.02	41(73)	0.01	29 (51.7)	0.51	42(75)	0.7
Female	29 (80)		34 (94)		26 (72.2)		28(77.7)	
Level of Training								
Junior (R1-R2)	24 (54)	0.022	32 (72)	0.037	28 (63.6)	0.47	34(77.2)	0.79
Senior (R3-R5)	37 (77)		43 (89)		27 (56.2)		36(75)	
Marital Status								
Married	31 (65.9)	0.14	40 (85)	0.36	29(61.7)	0.71	35(74.4)	0.71
Single	30 (66.6)		34 (77.7)		26 (57.7)		35(77.7)	
Children								
Yes	23 (71.8)	0.4	28 (87)	0.2	20(62.5)	0.698	21(65.6)	0.08
No	38 (63)		47 (78.3)		35 (58.3)		49 (81.6)	
Living with family								
Yes	50 (67.5)	0.6	63(85.1)	0.2	47 (63.5)	0.139	55(74.3)	0.42
No	38 (63)		12 (66.6)		8 (44.4)		15 (83.3)	
Self-quarantined								
Yes	38(80)	0.003	41(87.2)	0.14	27 (57.4)	0.64	36(76.5)	0.9
No	23 (51.1)		34 (66.9)		28 (62.2)		34(75.5)	
Total	61 (66)		75 (81.5)		55 (59.8)		70 (76.1)	

* Residents were asked to rate how often they worry about these issues from 1 (Never) and 5 (All the time). This table includes the number of residents that gave these items a high rating (4-5). There was a statistically significant higher number of female and junior residents concerned about contracting the virus as well as passing it on to their families. There was a statistically significant relationship between residents who self quarantined and concern for contracting the virus.

residents' main concern was infecting a member of their family. A study out of Wuhan, China, revealed that 41% of COVID-19 cases might have originated in healthcare facilities.[16] In particular, anesthetists are at high risk of contracting the disease due to their involvement in aerosol-generating procedures. A study by El-Boghdadly et al. showed that 1 in 10 anesthetists displayed signs of the disease after intubating a COVID-19 patient.[17] That may have driven 47% of our own anesthesia residents to isolate themselves from their families. This could have the inadvertent effect of worsening their well-being, as 16% of the residents

considered family their biggest support, and we found a statistically significant relationship between depression and living alone. One alarming finding was that 6% (7 residents) thought about hurting themselves almost everyday, six of those resident lived alone. The concern with infecting family members was higher among senior residents. This could be due to the bigger responsibilities and close involvement in patient care given to them during a crisis. Furthermore, this crisis is predicted to lead to a drop in salaries and employment rates. Many of the residents (approximately 60%) were concerned with the long-term financial implication the crisis would have on their future.

Most training facilities do provide support service. In Saudi Arabia, the SCFHS has a support service for residents enrolled in their training programs. Residents can signup online, and then they are contacted by a psychologist who will provide confidential support and guidance. This service is completely free for any resident enrolled in a SCFHS training program. Most hospitals also have onsite supportive services to help physicians dealing with stress and burnout. Our own site provided a 24-hour helpline during the crisis. But, shouldn't we be trying to prevent burnout from happening in the first place?

Long ago, the majority of medical training programs emphasized on improving clinical skills and knowledge. In 1993, after an outcry from the public on dissatisfaction with the healthcare system,[18,19] the medical curriculum around the world was modified to fit the society's needs and expectations.[20] Teaching in the UK, Canada, and the USA was transformed to improve patients' well-being. But, what about the physicians' well-being?

Unfortunately, little has changed to improve physicians' mindfulness and coping ability. Mindfulness addresses physicians' self-awareness and has been shown to reduce negative emotions and stress.[21,22] Even a physician's approach to a problem can affect their well-being. For example, seeing a difficult situation as a challenge rather than a threat may mobilize more positive emotions such as eagerness and curiosity.

The limitations of our study include a small sample size, and it was restricted to anesthesia residents. It may not be applicable to other specialties. We also lack information on the level of stress, anxiety, and depression in anesthesia trainees prior to the pandemic. We also have not inquired in our study whether the participants acquired well-being training or support at any time during their training.

In conclusion, while it is essential that hospitals have the necessary equipments to face a health crisis, mentally preparing healthcare workers is just as important. This would include revising medical training programs to incorporate mandatory courses in mental well-being and disaster management as well as ensuring adequate sources of support for struggling healthcare workers. It's about time to remove the stigma surrounding "seeking mental support" from health specialties. Training program directors must regularly meet with the staff and trainees to uncover emerging concerns and signs of burnout. By doing this, we may improve the global outcome of any future crisis and hopefully avoid a repeat of the heart-breaking consequences of the COVID-19 pandemic may be improved.

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