

Gaps identification in Saudi anesthesia residency training during early time of pandemic: Trainee view

ABSTRACT

Background: COVID-19 pandemic was declared a worldwide crisis, as a response the community established new protocols and clinical pathways to prepare the health system in adapting to the expected surge of cases. **Objectives:** In this study, we aim to assess the effect of the pandemic on the anesthesia training program residents from their own view. Identification of gaps in training programs will help to overcome the challenge like pandemic in order to have competent anesthesia practitioners. **Methods:** We deployed an online survey in early May 2020 targeting the anesthesia residents in Saudi Arabia. We used mixed methods, containing both quantitative and qualitative questions. Our survey had 3 main sections: demographics, pandemic effect on the training, and pandemic effect on the trainees. **Results:** Our survey showed that in the first 2 months of the pandemic there was a vast decrease in educational activities and clinical activities. However, after that both the Saudi Commission for Health Speciality (SCFHS) and local hospitals employed alternative education methods like electronic learning and simulation to adopt these changes. We also found the average stress level among residents was 6.5 out of 10 with number one stressor is transmitting Covid-19 to family or self. Finally, Wellbeing resources were available to residents however were not used sufficiently by residents. **Conclusion:** During times of pandemic, assessment and gap identification in postgraduate training programs are necessary to help overcome challenges of training anesthesiologists. Other than the clinical competency residents' wellbeing needs to be monitored and make available resources easy to reach for the residents.

Key words: Competency-well being; continuous; COVID-19; distant learning; medical education; pandemic; stress-assessment

Introduction


During a pandemic, healthcare systems shift the resources to focus on managing the outbreak, limit spread of the disease and prevent the healthcare system from collapse. This shift, result is interruption of the Continuous Medical Education (CME) in most medical training programs. For example, when the

Novel COVID-19 pandemic started, In Singapore, 75% of 32 specialty training programs had discontinued their programs immediately once (Disease Outbreak Response System Condition) DORSCON-Orange was announced (1). However, a few months later, CME was resumed remotely via distance learning methods such as tele- and videoconference.^[1]

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Also, many clinical and practical aspects of medical training have suffered from shifting resources due to the high demand resulting from COVID-19 surge. The pandemic has placed a significant strain on the healthcare system so that almost all elective patient encounters, surgeries, and clinical intervention were cancelled at the time.^[2] This impacted the clinical exposure of trainees.

In a systematic review looking at medical and surgical education challenges at the COVID-19 era stated the lack of elective cases, the limited number of personal in the operating room, the shortage of personal protective equipment (PPE), and clinical consultants tend to take over the cases during the pandemic time could create educational gap for residents' training.^[3]

As a consequence, anesthesia training schedules have been modified to adopt for COVID-19 patient surge and lack of elective clinical cases. Evaluation of COVID-19 impact on Italian surgical trainees showed that residents have impacted their residency program negatively due to resident and resources re-allocation reasons moved to non-surgical units because of coverage need, voluntary clinical services or because they started to feel COVID-related symptoms.^[4] Of course, these factors will affect the timely completion of the training program.

In Saudi Arabia, the anesthesia training program is under Saudi Commission for Health Speciality (SCFHS) as a national body supervising training, assessment and licensing. More than 38 training programs supervised by SCFHS through the Scientific Council with needed diversity in different sectors. Although there are multiple training sites for anesthesia training, a unified curriculum and summative exam is followed by all centers at national level. Anaesthesia Curriculum was built on competency based Canadian Medical Education Directions for Specialists (CanMEDS) and tackling all domains of training from knowledge, skills and behaviors through academic lectures, structured clinical rotations, workshops, logbook, and work-place based assessment.^[5] The anesthesia program is a 5-years run with final and mid-training summative exam covering all domains of training.^[6]

In this paper we aim to assess and identify the gap caused by COVID-19 on the Saudi anesthesia training from the trainee point of view as crucial step for proper planning and decision making to overcome challenge affects competent training of competent Anesthesiologist by sharing and comparing the experience with other national and international experiences during pandemic time.

Methods

We used mixed methods survey design, containing both quantitative and qualitative questions.^[7] We designed and deployed an online survey in the first week of May 2020, using Google Forms targeting trainees in the Saudi anesthesia training program. The collected data reflect the early phase of pandemic as the first case of COVID-19 in Saudi Arabia was confirmed by the Ministry of Health on 2nd of March 2020.^[8] Our survey [Appendix 1] had 3 main sections, demographics, pandemic effect on the training, and pandemic effect on the trainees. We inquired about the educational, physical, and psychological aspects. Open-ended questions were also included to solicit any unaddressed questions or needs.

The survey was peer tested and piloted before deployment. The Scientific Committee of the Saudi Anaesthesia Residency Program sent out the final survey electronically to all residents. We did not collect any identifying data and our survey was anonymous and no answers can be traced to individual participants. No pressure or retaliation was used for non/low responding facilities. The study was approved by our King Abdulaziz University Hospital Ethical Committee (ref. No. 412-20).

After data collection, we conducted a descriptive analysis. Data coding was completed manually. Data was analyzed using multiple measures of dispersion, and cross-tabulations. We presented quantitative data for categorical variables as percentages or frequencies as appropriate. Two authors independently reviewed and categorized qualitative data.

Results

Out of 380 anesthesia residents, 271 responded to our survey, which represents 71% response rate. Demographically, the respondents were by diverse gender, seniority level, and region as a true representation of the whole resident population [Table 1].

During the first two months of the pandemic there was marked paucity in educational activities conducted by the SCFHS and local hospital's training centers. SCFHS represented by Scientific Council decision was to hold lectures and workshop at that time. 185 (66.8%) residents reported having no lectures, 235 (87.04%) reported having no workshops, 134 (48.6%) reported having no E-learning, and 190 (70.3%) residents reported having no small group discussion [Table 2]. Clinical exposure satisfaction among

residents during COVID-19 Pandemic showed that only 13% were very satisfied, 49% of participants satisfied and 38%

Table 1: Demographics

	Number of respondent	Percept of respondent
Seniority level		
R1	58	21.48%
R2	59	21.85%
R3	61	22.59%
R4	53	19.63%
R5	36	13.33%
Region		
Central	134	49.63%
East	33	12.22%
West	102	37.78%
Gender		
Male	182	67.41%
Female	85	31.48%

Table 2: Types of activities during the first 3 months of the pandemic

	Number of completed activity	Number of respondent	Percept of respondent
Lectures	0	185	68.52%
	1-2	46	17.04%
	3-5	25	9.26%
	5-10	10	3.70%
	>10	3	1.11%
Workshops	0	235	87.04%
	1-2	32	11.85%
	3-5	2	0.74%
	5-10	0	0.00%
	>10	0	0.00%
E-learning	0	134	49.63%
	1-2	68	25.19%
	3-5	40	14.81%
	5-10	21	7.78%
	>10	5	1.85%
Small group discussion	0	190	70.37%
	1-2	41	15.19%
	3-5	24	8.89%
	5-10	9	3.33%
	>10	5	1.85%

not satisfied. When asked how best to deal with the paucity of training, residents reported to engage in self-studying 228 (84%) and interactive e-learning 176 (65%). Other options were chosen by residents as shown in Figure 1 demonstrated by seniority level.

About 44% of responders felt their hospitals are dealing well with the pandemic and 45.5% felt it was ok while the rest 10.5% felt their hospitals are not dealing well with the pandemic. More than 60% of residents received adequate PPE, N95 fitting and COVID-19 airway training. When we asked about handling COVID-19 cases presented to the operating room for surgery, 59% of residents had not handled COVID-19 cases as these were usually handled by senior anesthesia staff and consultants. Most of the residents (82%) felt that this is appropriate and they should be involved only as 2nd line providers in COVID-19 cases. The percentage of trainees who participated in volunteer work related to COVID-19 is 60%.

While 96% felt at risk of being infected in daily work, only 33% had a COVID19 test and that was negative and no registered positive COVID-19 test among residents.

Regarding the highest concerns for all residents in term of completion of training were persistence of the pandemic for long time 195 (72%), delay in their certification and graduation 123 (45%), having a significant gap in their competency level 100 (36.9%) and 22 (8.1%) had other non-specified concerns [Figure 2]. Figure 3 showed the subgroup analysis for the same item for last year residents (R5s).

The average stress level was 6.5/10. The stress level was not affected by the region or gender. However, it was found that stress level to be more than 5 more commonly among R3 residents (78%) but this was not statistically significant [Figure 4]. The top five stressors to residents were; infecting family or friends (34%), getting infected (30%), decline in education and learning (28%),

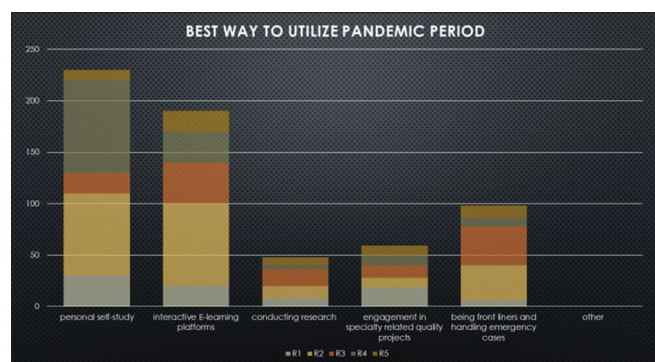


Figure 1: The best way to utilize pandemic period from the participants concern



Figure 2: Highest concern of the participants regarding the completion of training

decline in preparation for exams (25%) and stressful workload/ environment (11%) [Figure 5].

When we asked about residents' wellbeing need and support, results showed that 34% of participants thought they did not need any wellbeing support, 26% had no idea of available support, while the rest asked for support through their hospitals (34%) or SCFHC (16%) [Figure 6].

Discussion

When COVID-19 pandemic was declared as a worldwide crisis, the medical community was shocked initially and the impact on postgraduate medical education was robust.

Medical programs and councils realized concerns of training residents. Videoconferences were dominating as a most immediate practically applicable solution.^[9] In this study when we looked at teaching activities by the local training committee during the first two months of COVID declaration, anesthesia residents responded that E-learning and web-based lectures were most conducted at the time. This was followed by lectures then small group discussion and the least was workshops [Table 2]. As all aspects of training programs have been affected (reduced caseload,

sup-specialty experiences, supervised procedures, and cancelled educational activities), this leads to impaired learning in anesthesia training programs which is a threat to residents progression in training.^[10]

Residents suggested Self learning as the first solution for the impact of decreased cases; however, this will manage anesthesia residents' knowledge base components only. The other domain in residents' training is continuous clinical assessment which cannot be handled by self-reading. Therefore, educational institutes and hospitals need to establish new ways and modify the established postgraduate training programs to support their learning with maintaining competencies for their competency. For example, the anesthesia department at the University of Toronto had looked at number of assessments completed during the pandemic and found that has led to considerably decreased anesthesia clinical volumes (65–80%) decrease across educational sites based on data from a survey of anesthesia department chiefs across academic sites in Toronto, ON, Canada.^[11] Based on their data, it has negatively impacted residents' assessments including workplace-based

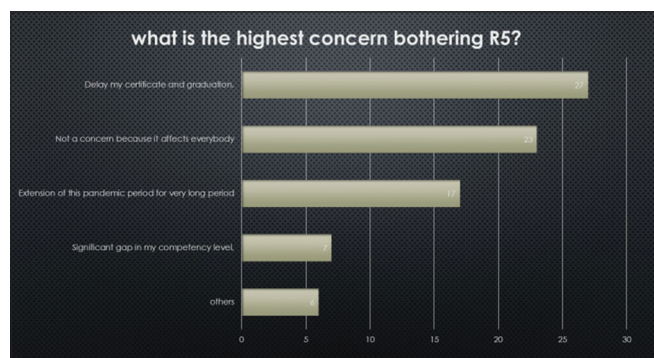


Figure 3: The highest concern bothering R5 during COVID-19 pandemic

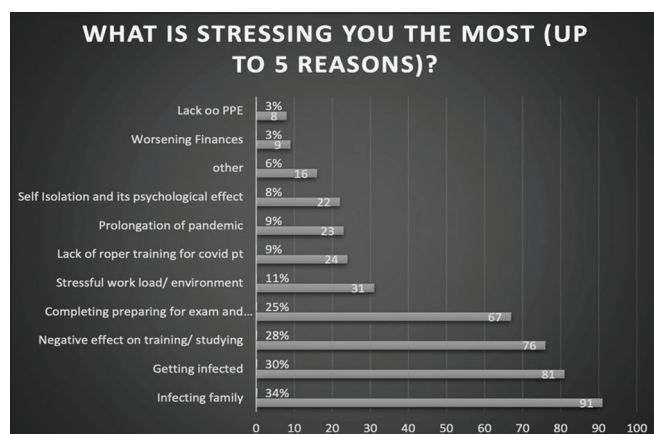


Figure 5: The reasons of stress among the participants



Figure 4: The level of stress related to training level

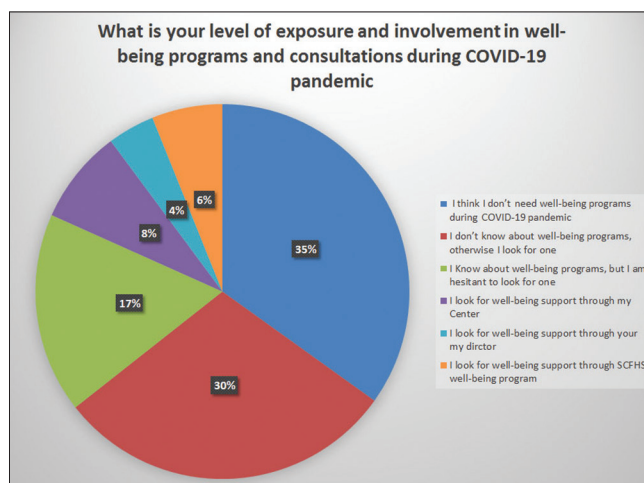


Figure 6: The level of exposure and involvement in well-being programs and consultations during COVID-19 pandemic

assessment data obtained, and completion of Entrustable Professional Activities (EPAs).^[11]

With change in need and cancellation of elective procedures, residents across Saudi Arabia have been reallocated for clinical coverage outside anesthesia services. The Scientific Committee of the Saudi anesthesia Residency Program raised their concerns as a strategic supervising body for training gaps on training, assessment process, and competencies for resident's graduation during this pandemic year. The Scientific Committee of the Saudi anesthesia Residency Program advised the use of Workplace Assessment and encouraged the use of Videoconferencing tools for lectures and Problem Based Learning (PBL). COVID-19 rotation was established in April 2020 to be integrated into the curriculum. This rotation aims to care for the pandemic patients including rotating residents for clinical coverage out of operating rooms during that time like medical floors and Emergency Rooms. They also encouraged residents to complete the online COVID-19 Critical Care Crush Course (5C Course) provided by Saudi Commission for Health Specialties, a course to teach basics for caring of Covid-19 critical patients.^[12]

In anesthesia remote training, videoconferencing tools have been shown to be useful in expanding urgent educational needs on an international level. The use of videoconferencing is not only for education but also for clinical management as well to limit patient contact as part of COVID-19 precaution. This pandemic has demonstrated the great potential of these technologies to ensure exchange of timely clinical experiences globally and proven to be a useful tool in the CME for physicians.^[13,14]

The use of videoconference might be effective for many medical specialties, but not all of them. During this pandemic surgical residency programs videoconference tools was adopted as a way of CME in-training programs. In the United States, orthopedics residency and fellowship training programs used virtual meeting platforms, independent home study, surgical simulation, and fostering leadership opportunities as potential tools for training. On the other hand, they were faced with many challenges. The main was the cancelation of elective surgeries during this time. These challenges raised the concern of how residents and fellows can provide high-quality orthopedic care for years to come.^[15]

Procedural skills training is one of many competency-based program certification. J.S.E Lee *et al.* stated in obstetric anesthesia procedural training (Regional anesthesia and difficult airway skills management) could be trained on

mannequins to enable basic skills training. Conducting virtual reality difficult airway gaming scenarios for residents and case-based discussions on obstetric (and non-obstetric) difficult airway management are some of proposed mitigating measures in decision-making at critical junctures of the crisis scenario during obstetric anesthesia training program.^[16]

Workshops have been in hold initially, but then The Scientific Committee of the Saudi Anaesthesia Residency Program had to find a way for mandatory workshops to be completed before graduation. This could compensate for dramatic drop in clinical exposure with strong recommendations of extreme COVID-19 precautions. Simulation-based medical education enables knowledge and procedure-based skills to be learnt.^[17] In workshops, social distance and equipment disinfection are important considerations at pandemic times. A great deal of flexibility will be required to overcome obstacles during pandemic time and to adopt simulation techniques with maintaining safety of learners and educators.^[18,19]

In this survey, the average stress level was 6.5/10. No relation has been found regarding to neither region nor level of residency training. The top five stressors to the residents were: Infecting family or friends, getting infected, decline in education and learning, decline in preparation for exams, and stressful workload/environment. In our paper a major concern of getting or transmitting COVID-19, which concur with a similar paper looking at stress among surgical residents during COVID-19 pandemic, over 90% of residents expressed concern about the decline in operative exposure and were more concerned about the general health of loved ones than about their own risk of contracting COVID-19.^[20] Assess stressors among anesthesia residents can be eye opener to identify the impact of COVID-19 on residency training programs.

Providing wellbeing support and reminding residents with psychological support availability during this time is crucial to maintain a safe working and learning environment. Most of residents stated in this survey that they need some-sort of wellbeing support. As for the unawareness of well-being availability for residents, it is important for program directors to engage with residents in regular bases to offer support and identify residents' risks of stress and burnout for early management and intervention. It is also crucial for medical education programs to collaborate with the workplace health system to provide, maintain, and reach out for trainee's well-being.^[21] Logically, Wellbeing programs become more crucial during pandemic with high need for early intervention and support. SCFHS provides a wellbeing program for residents launched on 16 February 2019.^[22]

During this rapidly evolving crisis, adaptation by being flexible to alternatives on education and assessments must be looked at to overcome the obstacles affecting anesthesia residency training. Collaboration will be required from both learners and educators, by offering alternative approaches such as: videoconference, electronic learning, and simulation for practicing skills and competency assessment which will be here to stay.

Limitations to our study include the early deploying of the survey, which was necessary to plan for the coming period. Also, we did not include the trainers in the program which is being done currently by our group. We recommend repeating the survey periodically to continue assessing and planning accordingly.

Conclusions

During time of pandemic, assessment and gap identification in postgraduate training programs is necessary to support proper decision making and planning. This will help to overcome challenges facing graduate competent anesthesiologist during and after pandemic. In anesthesia Residency training program in Saudi Arabia, the impact affects formative assessment, workshops, and clinical exposure. Medical education at pandemic time can be provided through using distant learning for knowledge-based training and simulation for skills-based training. Also, wellbeing and preventing burnout is very important during the pandemic and residents might be unaware of existing resources. This pandemic raises a flag to give more focus on online education and residents' wellbeing situation.

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Conflicts of interest

There are no conflicts of interest.

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