

A national survey evaluating the effect of COVID-19 pandemic on the teaching and training of anaesthesiology postgraduate students in India

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ABSTRACT

Background and Aims: Anaesthesiologists have been in the forefront of managing patients of the novel coronavirus disease 19 (COVID-19) globally. The rearrangement of duties of anaesthesiology professionals and trainees along with the enforced containment measures like cessation of gatherings (for classroom teaching), cancellation of large number of elective cases and restricted number of procedures that are being performed have adversely affected the training of anaesthesiology postgraduate students across the country. **Methods:** An electronic survey to assess the effect of the measures taken by hospitals due to COVID-19 on postgraduate teaching was undertaken using a validated questionnaire. We used snowball sampling, and the survey invitation with the web link was shared through freeware WhatsApp. The participation in the survey was voluntary and anonymity was maintained. Data obtained from the responses was collated and analysed. **Results:** A total of 595 anaesthesiology postgraduate students (males = 298, females = 297) responded to the survey. Majority of the participants reported a steep depreciation (>50%) in the quality and quantity of academic activities (57.47%), major changes or cessation of clinical rotations (73.61%) and inability to conduct thesis-related cases (55.29%). In total, 56.97% of the students reported the rise in usage of online platforms like “Zoom” for conduct of routine academic activities. **Conclusion:** Teaching and training schedules of anaesthesiology postgraduate students have undergone major modifications following the COVID 19 pandemic. Resourcefulness and ingenuity in teaching methods is the need of the hour to sustain the desired standards of training courses and to maintain the quality of the budding anaesthesiologists.

Key words: Academic training, anaesthesiologists, coronavirus disease -19 (COVID-19), educational activities, India, pandemics, students

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INTRODUCTION

Coronavirus disease19 (COVID-19) caused by a novel virus has been declared as a pandemic by the World Health Organization after its first appearance in China in 2019.^[1-4] In response, a nation-wide lockdown was enforced in India from Mar 24, 2020 onwards.^[5] This pandemic and the consequent lockdown has affected the social, psychological, economic, and educational aspects of human life and behavior unprecedentedly.

Anaesthesiologists throughout the world have been forerunners in managing patients during

this pandemic and are susceptible to contract it themselves.^[6]

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In traditional anaesthesiology teaching, teaching by the operating table was the norm. Hands-on experience on live patients was the only method of gaining experience and skill. Simulation-based competency training is yet not firmly established. Manpower redistribution to COVID19 designated areas, inability of the patients to reach the hospital due to restrictions in movement, and concerns regarding the infective status of patients have contributed to a reduction in the number of elective cases performed. These changes have also affected classroom teaching and the conduct of other academic activities across India such as seminars and conferences. A structured postgraduate (PG) training program is a critical determinant of the quality of the future anaesthesiologists of our country. As the situation is still evolving and uniform guidelines regarding modifications in PG teaching methods are lacking, widespread deviation is occurring in the present-day teaching and training practices, compared to the pre-existing patterns. We therefore decided to undertake this electronic survey among Diploma in Anaesthesiology (DA)/Diplomate of National Board (DNB)/Doctor of Medicine (MD) postgraduate students (PGS) in India to ascertain the impact of the COVID 19 pandemic on their teaching and training during the initial few months of the pandemic. We attempt to discuss and identify these contemporary issues and try to suggest solutions for the same.

METHODS

The study enrolled anaesthesiology PGS from different medical colleges and institutions across the country and was conducted over one week from May 3, 2020 to May 9, 2020. The survey was approved by our Institutional Ethics Committee (2020-130-IP-EXP-18, dated 30/4/2020) and was registered with the Clinical Trial Registry of India (CTRI/2020/05/024984 dated 03/05/2020). For deriving the sample size, we calculated the approximate number of PGS in anaesthesiology across India to be approximately around 12000 as per the Medical Council of India and DNB websites.^[7,8] Assuming that, at least 50% of PGS in anaesthesiology had experienced moderate to severe impact of the lockdown during the pandemic, at minimum two-sided 95% confidence level and 10% relative error, a minimum sample size of 385 was obtained. Assuming a nonresponse of 15%, we targeted a sample size of 433 respondents. Finally, we received 595 completed responses which were analysed. The sample size was estimated using software Power Analysis and Sample Size version-16 (PASS-16, LLC, USA).

A questionnaire containing a series of 20 open-ended and multiple-choice questions [Annexure 1] was designed based on literature search and our personal experiences. The content validity of the questionnaire was performed by six experts (four PG teachers and two PGS), who rated each question on a Likert scale on the basis of simplicity, clarity, ambiguity, and relevance. Overall agreement calculated was 83.67% for simplicity (free marginal kappa=0.78), 77% for clarity (free marginal kappa=0.69), 84.33% for ambiguity (free marginal kappa=0.79), and 77% for relevance (free marginal kappa=0.69), respectively, indicating good agreement. Reliability was established using the test-retest method on six PGS, and the Pearson correlation coefficient was 0.96.

The validated questionnaire was uploaded on the SurveyMonkey platform (SurveyMonkey, San Mateo, CA). Snowball sampling was used to disseminate the questionnaire across India. A link to the questionnaire was sent to the Whatsapp numbers and WhatsApp groups of anaesthesiology PGS. Faculty members known to the authors across India were requested to distribute the link among their PGS using the same methods. After 1 week, the total responses received were collated, tabulated, and analysed.

The categorical variables were expressed as number and percentage. One sample Chi-square test was used to compare the proportions between the groups as, in all the cells, expected count was at least 5. A *P* value < 0.05 was considered statistically significant. GraphPad Prism 8 was used for statistical analysis.

RESULTS

We received a total of 595 complete responses that were included in the final analysis.

Gender, year of training, type of institute, and the zone wise distribution [Figure 1] of the respondents are given in Table 1. Most of the respondents (77.65%) belonged to government college/institutions that were actively involved in managing COVID 19 patients. The number of PGS who were themselves involved or were anticipating COVID 19 duties was 292 (49.07%) and 211 (35.46%), respectively. In total, 60.84% had received some form of simulation/specialised training as a preparatory measure for management of COVID 19 patients. Typically, 209 (35.12%) students

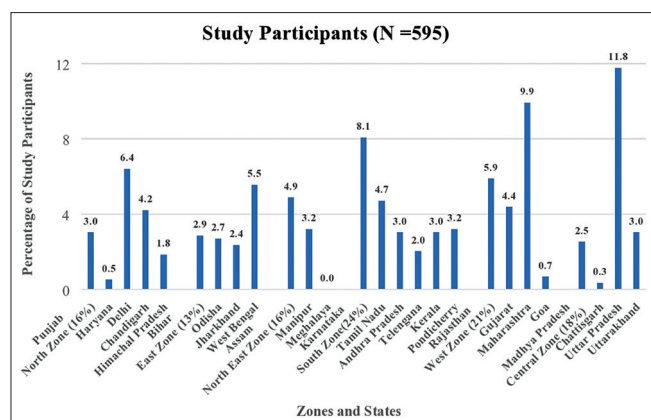


Figure 1: Zone and State wise responses

had been quarantined and 217 (36.47%) respondents were expecting to be quarantined [Table 2].

Greater than 50% of the respondents felt that the quality and quantity of the teaching programs had declined [Table 3]. The usual rotations in the different operation theatres, intensive care units (ICUs), peripheral locations, etc., had been grossly altered (39.83%) or had ceased (33.78%) till further notice. Quite a few (43.38%) students were attending webinars but were irregular, 12.26% were not attending, and 3.02% were unaware of such programs. Usage of online conference platforms like “Zoom”/“Skype”/“Google Hangouts” for teaching activities had been endorsed by 49.24% of the informants. A vast majority of students (72.6%) were of the opinion that learning of technical skills like airway management, vascular access, and regional techniques has been affected in this situation. In total, 326 (54.78%) PGS reported getting more time for self-studies. Thesis work had been affected adversely. A large number (69.79%) of the second year students have not been able to continue their thesis work due to the lack of cases. Postponement of examinations has been observed in a majority of colleges/institutions (63.86%) and in 31.09% of places; there was no intimation regarding the examination schedule. A miniscule number of respondents (1.6%) had published literature or had attempted certain innovations related to COVID 19. Few of them (2.6%) had conveyed their ideas to their seniors, and 2.5% were in the process of publishing medical literature [Table 4].

In total, 53% of the PGS were aware of the Indian Society of Anaesthesiologists practice guidelines/ advisory regarding patient management in the midst of COVID pandemic [Table 5]. Close to half (45.88%)

Parameters	Categories	Number (%)	χ^2 , P [†]
Year of postgraduate study	1 st year	189 (31.76%)	1.87, 0.39
	2 nd year	192 (32.27%)	
	3 rd year	214 (35.97%)	
Gender	Male	298 (50.17%)	>0.99*
	Female	297 (49.83%)	
Zone of the Country	North Zone	95 (15.9%)	57.30, <0.0001
	East Zone	78 (13.10%)	
	South Zone	143 (24.03%)	
	West Zone	124 (20.84%)	
	North East Zone	48 (8.06%)	
	Central Zone	107 (17.98%)	
	Corporate	62 (10.42)	
College/Institute	Government	462 (77.65%)	526, <0.0001
	Private	71 (11.93%)	
	Corporate	62 (10.42%)	

Data expressed as frequency (%). One sample Chi-square test used; P<0.05 significant; *Chi square; †P value

of the respondents reported the incorporation of these guidelines in their practice or their modification as per the local protocols and 42.52% reported that their hospitals already had their own guidelines. Majority (67.89%) of the PGS believed that the current situation emanated certain positives. It had inculcated a spirit of leadership (0.5%), prepared for similar situations in future (12.6%), and had underlined the importance of anaesthesiologists (16.47%) [Table 5].

DISCUSSION

The coronavirus pandemic has presented unparalleled challenges for anaesthesiology PGS. Our survey-based study is an endeavor to find the initial nature and extent of effects on the academic activities of PGS during the pandemic and is probably the first of its kind.

Most of our survey respondents were from government medical colleges and institutes. Perceptibly, majority of the government medical institutions have been transformed into nodal centers and first line specialized COVID centers.

A sizeable number of PGS were actively involved in care of COVID 19 patients. According to the guidelines on the deployment of residents/PGS issued in the standard operating procedure of the Ministry of Health and Family Welfare, Government of India,^[9] the PGS of anaesthesiology and critical care of the main hospitals and centers have been categorized as belonging to the core departments entrusted with COVID patient management in the appropriate facility.^[9] The same document emphasizes the necessity of undergoing an essential training module prior to involvement in

Table 2: Involvement in pandemic management (n=595)

Category	Responses			χ^2 , P^i
	Yes	No	Expecting/Could not attend (only for row 3)	
Involvement of institute/hospital in COVID patient management	513 (86.21%)	18 (3.02%)	64 (10.75%)	754.2, <0.0001
Personal involvement in COVID patient management	292 (49.07%)	92 (15.46%)	211 (35.46%)	102.1, <0.0001
Training/Simulation Classes before involvement in COVID patient management	362 (60.84%)	225 (37.81%)	8 (1.34%)	321.3, <0.0001
Quarantined	209 (35.12%)	169 (28.40%)	217 (36.47%)	6.67, 0.04

Data expressed as frequency (%). One sample Chi-square test used; $P < 0.05$ significant; * – Chi square; $^i P$ value

Table 3: Effects on conventional academic and training activities (n=595)

Category	Responses	1 st Year	2 nd Year	3 rd Year	Overall
Have the routine academic activities (lectures, seminars case presentations, audits, etc.) been affected	No change	20 (10%)	22 (11.45%)	27 (12.61%)	69
	0-25% decline	25 (13.22%)	27 (14.06%)	39 (18.22%)	91
	25-50% decline	34 (17.98%)	26 (13.54%)	33 (15.42%)	93
	>50% decline	110 (58.20%)	117 (60.93%)	115 (53.73%)	342
	Total	189	192	214	595
	χ^2 , P^i	113.2, <0.0001	132.5, <0.0001	95.61, <0.0001	337.1, <0.0001
Have the clinical rotations been affected	No change	15 (7.93%)	14 (7.29%)	13 (6.07%)	42
	Minor change	40 (21.16%)	34 (17.70%)	41 (19.15%)	115
	Major change	69 (36.50%)	81 (42.18%)	87 (40.65%)	237
	Stopped	65 (34.39%)	63 (32.81%)	73 (34.11%)	201
	Total	189	192	214	595
	χ^2 , P^i	39.8, <0.0001	55.54, <0.0001	61.66, <0.0001	155, <0.0001
Has the anaesthesia skill learning been affected	Yes	145 (76.71%)	145 (75.52%)	142 (66.35%)	432
	No	32 (16.93%)	34 (17.70%)	49 (22.89%)	115
	Unsure	12 (6.34%)	13 (6.77%)	23 (10.74%)	48
	Total	189	192	214	595
	χ^2 , P^i	163.3, <0.0001	157.2, <0.0001	109.8, <0.0001	424.3, <0.0001
Effect on self-study	Getting more time	119 (62.96%)	97 (50.52%)	110 (51.40%)	326
	Getting less time	34 (17.98%)	58 (30.20%)	77 (35.98%)	169
	No change	36 (19.4%)	37 (19.27%)	27 (12.61%)	100
	Total	189	192	214	595
		χ^2 , P^i	74.7, <0.0001	28.97, <0.0001	48.96, <0.0001

Data expressed as frequency (%). One sample Chi-square test used; $P < 0.05$ significant; *Chi square; $^i P$ value

active COVID patient care conducted by the hospital infection control team. Uniformity in devising and delivering the training has been stressed upon.^[9] We observed that 362 (60.84%) of the PGS had undergone some form of simulation/specialised training related to the management of COVID 19 patients. However, 225 (37.88%) of the respondents reported not having received prior training. Amongst those who denied having received training, 191 respondents were either actually involved in COVID 19 patient management or were expecting to be called for similar duties in the future. Though reasons were not elucidated, inadequate logistics/facilities, lack of trainers, and information or enforcing mandatory participation in the training sessions could have been the plausible reasons for the same. We feel that these lacunae need to be addressed in the future to prevent any mishaps.

Quarantine often becomes an inevitable part of the teams exposed to COVID 19 patients. The National Centre

for Disease Control initially recommended a 14-day quarantine period for health care workers (which later got discontinued).^[10] Our survey showed that 35.12% of the survey participants had been quarantined and 36.47% respondents were expecting to be quarantined. Quarantine and the associated restrictions have affected the normal orderly schedule of PGSS' life and disrupted their usual academic and training activities. The American Board of Anesthesiology in its updated statement has clarified that the time spent in quarantine (except discretionary travel) will be counted as clinical hours for residents and fellows thereby easing their attendance criteria.^[11] The associated psychosocial effects of quarantine require social support and at times may require psychiatric/counselor assistance.^[10]

Usual academic activities like lectures, case presentations, seminars, audits, etc., have been completely or partially suspended, with 57.47%

Table 4: Features of ongoing academic activities (n=595)

Academic Activities	Responses	Responses			Overall
		1 st Year	2 nd Year	3 rd Year	
Webinar attendance	Always	7 (3.70%)	7 (3.64%)	4 (1.86%)	18
	Frequently	60 (31.74%)	64 (33.33%)	86 (40.18%)	210
	Infrequently	94 (49.73%)	88 (45.83%)	94 (43.92%)	276
	Never	23 (12.16%)	28 (14.58%)	22 (10.28%)	73
	Unaware	5 (2.64%)	5 (2.60%)	8 (3.73%)	18
	Total	189	192	214	595
	χ^2 , P^{\dagger}	155.9, <0.0001	138.7, <0.0001	178.4, <0.0001	565.9, <0.0001
Usage of online platforms for classes	Yes	97 (51.32%)	94 (48.95%)	102 (47.66%)	293
	No	78 (41.26%)	81 (42.18%)	97 (45.32%)	256
	Planning	14 (7.40%)	17 (8.85%)	15 (7%)	46
	Total	189	192	214	595
	χ^2 , P^{\dagger}	60.03, <0.0001	53.09, <0.0001	66.91, <0.0001	179, <0.0001
Effect on thesis related work	No effect	32 (16.93%)	51 (26.56%)	141 (65.88%)	224
	Unable to get ethical clearance	29 (15.34%)	7 (3.64%)	6 (2.80%)	42
	Unable to do thesis cases	128 (67.72%)	134 (69.79%)	67 (31.30%)	329
	Total	189	192	214	595
	χ^2 , P^{\dagger}	100.7, <0.0001	130, <0.0001	128.1, <0.0001	212.6, <0.0001
Publishing of medical literature/innovation	Yes	2 (1.05%)	3 (1.56%)	5 (2.33%)	10
	No	181 (95.76%)	179 (93.22%)	194 (90.65%)	554
	In process	5 (2.64%)	4 (2.08%)	7 (3.27%)	16
	Conveyed ideas	1 (0.53%)	6 (3.13%)	8 (3.73%)	15
	Total	189	192	214	595
	χ^2 , P^{\dagger}	505, <0.0001	476.8, <0.0001	492.1, <0.0001	1472, <0.0001
Examination Schedule	Postponed	On Time	No information	χ^2 , P^{\dagger}	
	380 (63.86%)	30 (5.04%)	185 (31.09%)	310.2, <0.0001	

Data expressed as frequency (%). One sample Chi-square test used; $P < 0.05$ significant; χ^2 Chi square; P^{\dagger} P value

Table 5: Advisories and learning points (n=595)

Category	Responses				χ^2 , P^{\dagger}	
	Aware about the guidelines	Unaware regarding the guidelines	Unclear about the guidelines			
Knowledge regarding ISA [‡] guidelines	320 (53.78%)	143 (24.03%)	128 (21.51%)		112.9, <0.0001	
Implementation of ISA [‡] Guidelines	Guidelines have been implemented	Guidelines have not been implemented	The hospital has its own Guidelines		χ^2 , P^{\dagger}	
	273 (45.88%)	69 (11.59%)	253 (42.52%)		127.5, <0.0001	
Learning points	Improved preparation for future	Inculcating leadership qualities	Underlined importance of anesthesiologist	None	All of the above	χ^2 , P^{\dagger}
	75 (12.60%)	3 (0.5%)	98 (16.47%)	15 (2.52%)	404 (67.89%)	906.5, <0.0001

Data expressed in frequency (%). One sample Chi-square test used, $P < 0.05$ significant; χ^2 Chi square; P^{\dagger} P value; [‡]Indian Society of Anaesthesiologists

of the students in the current survey reporting a severe decline (>50%) in the quality and quantity of academic endeavors compared to the previous times. An innovative solution was the use of teleplatforms for continuing the educational activities. Various device/mobile friendly conferencing applications like Zoom, Skype, Google hangouts are being used as viable and cost-effective measures for academic exercises. In total, 56.97% of our survey participants reported the usage of these teleconferencing modalities in their institutes or were in the process of using them. The Accreditation Council for Graduate Medical Education (ACGME) in its official response to the

pandemic has advocated the use of teleplatforms for continuing educational opportunities.^[12] Limitations of these modalities include technical restrictions of certain individuals to navigate the internet, internet speed-related issues, connectivity, cyber security concerns, and unnecessary background noise. Other advantages of traditional teachings like real-time feedback, collaborative learning, critical thinking, doubt clarification, and face-to-face interactive discussions cannot be replicated effectively.

Anaesthesiology PGS are usually rotated various operation theatres, ICUs, and peripheral locations to

improve their overall skill set and clinical acumen. Reduction in number of elective cases, manpower crunch, and closure of certain facilities has disturbed the usual rotation schedules. In our survey, a large section (73.61%) of the residents reported gross alteration or complete cessation in their rotation schedules. As an alternative to clinical placements, students at Imperial College London are being given access to an online repository of patient interview recordings and cases.^[13] However, with these techniques, development of clinical acumen and reflex conditioning is questionable.

Anaesthesiology training entails a significant honing of procedural skills related to airway management, regional techniques, vascular access, etc., Presently, as the focus lies on least exposure times, the onus invariably falls on the senior member of the anaesthesiology team who usually performs the procedure to expedite it. This often leaves the trainees bereft of opportunities to perform the procedures thereby affecting their learning curve. Many (72.6%) PGS believed that the learning of essential skills was being hampered. An Italian study on urology residents showed that residents of the second year onwards, experienced compromise in their surgical and procedural activities.^[14] Teleteaching has its limitations and cannot substitute for actual patient contact.^[13]

Completion of a thesis (dissertation) is an essential component of MD/DNB candidates' curriculum. Few (27.73%) of our respondents did not suffer from any disturbance in their thesis related work. This value excluded the final year (46) and Diploma students (13) who had either submitted their dissertation or were not required to do so; however, 55.29% students complained that they were unable to get cases for their thesis due to cessation of elective cases. In total, 7% students could not commence their thesis work as they could not get the necessary ethical approvals prior to enrolment of the cases. The ACGME in its official response to the pandemic to guide sponsoring institutions has acknowledged that nonessential research has been suspended in many institutions.^[12] It is accepted that fellows/residents may not be able to complete in-process research secondary to these suspensions.^[12]

Professional societies have been regularly conducting webinars to discuss the available evidence and chalk out future strategies. In total, 46.39% of our respondents reported attending these webinars

infrequently. However, very few webinars are actually related to regular PG teaching.

Several (63.86%) of our survey participants reported postponement of their examinations and 31% did not have any information regarding their exam schedule. The American Society of Regional Anesthesia and Pain Medicine's (ASRA) official response to COVID document^[12] mentions contingency plans that include conducting exams at the usual time, postponement, or cancellations. Formative or summative assessments for core knowledge have been suggested to be done using online tools and platforms.^[15] Publication of medical literature and scientific innovations are usually not accorded priority in our conventional postgraduate teaching. A vast majority (93%) of our respondents has not made any efforts to publish contemporary literature; nevertheless, we sincerely suggest that efforts to guide and encourage PGS to publish and nurture their scientific innovations should be undertaken by their senior colleagues.

The Indian Journal of Anaesthesia has recently published elaborate guidelines and articles regarding perioperative and critical care concerns during the COVID 19 pandemic.^[16,17] A sizeable proportion of the PGS are aware of these practice advisories and their hospitals have incorporated the same. However, it is felt that there is a need for wider dissemination of the advisories across the country so that they can be adopted with local modifications if required.

Our survey respondents believed that the pandemic has provided opportunity for developing leadership qualities, improving preparedness for disaster management and facing future calamities, and highlighted the role of anaesthesiologists. The pandemic can therefore be likened to a "rotatory posting in pandemic and disaster management" for developing leadership and preparedness traits during the PG training. The attention and acknowledgement that anaesthesiologists have garnered during this pandemic has been unprecedented.

Prior studies have shown that inclusion of telemedicine technologies during undergraduate medical training improves competencies, knowledge, learning, and results in higher quality patient care.^[18] We believe that usual teaching patterns are unlikely to return soon, and an increased reliance on telemedicine, simulation, and interactive web-based educational programs, including telementoring are viable futuristic strategies.

Our survey has certain limitations. Data from certain states could not be collected despite our earnest attempts (repeated reminders and forwarding of the link on alternate days). The opinion of faculty members/PG teachers was not taken into account, which is important while reframing or reorganising educational policies. Duration of the survey was limited to 1 week to achieve an on-ground snapshot. This might have been counterproductive as the situation is dynamic and newer trends might have emerged in the succeeding time period which can be the topic of future research. The strength of our study is that the response rate was high. The survey was conducted, and responses were collected within lockdown period thus preventing recall bias among respondents and factor alterations.

CONCLUSION

Our survey revealed that due to the COVID-19 pandemic, there has been a substantial disruption in the existing patterns of PG teaching and training across our country and this is expected to persist. Resumption of academic and training activities will have to rely heavily on innovation and technology. Rescheduling of examination dates and modifications in thesis protocols should be kept as contingency plans for the existing students to satisfactorily complete their courses. Comprehensive support to safeguard the academic and moral well-being of the trainees should be provided. We hope that the findings of our study will increase awareness regarding the challenges and provide a framework for the educational policy makers to chart a viable and progressive road map for reorganising PG anaesthesiology training in India.

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Conflicts of interest

There are no conflicts of interest.

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ANNEXURE 1

1. In which year of postgraduation training (MD/DNB/DA) are you currently in?
a) 1st Year b) 2nd Year c) 3rd Year
2. What is your gender?
a) Male b) Female
3. In which state of India is your hospital situated?
4. What is the type of your Institute/College?
a) Government b) Private c) A corporate/Private Hospital d) Others (Please Specify)
5. Is your hospital/department involved in managing COVID 19 patients in your region?
a) Yes b) No c) Not presently but getting prepared to manage
6. Are you personally involved in COVID patient management?
a) Yes b) No c) Not currently but will be in future
7. Have you received any simulation training/specialised training related to COVID 19 management?
a) Yes b) No c) Could not do so (please specify reasons)
8. Have you been quarantined/or been asked to isolate yourself after managing/contacting COVID 19 patients?
a) Yes b) No c) Not presently but anticipating in future
9. Has there been a decline in the quality and quantity of the academic program following the COVID 19 pandemic (seminars, case presentation, didactic lectures, audits, etc.)? If yes, then approximately to what percentage
a) no change b) 0–25% decline c) 25–50% decline d) > 50% decline
10. How has your rotation in different OT's, ICU's and peripheral locations (as per usual departmental policies) been affected following the pandemic?
a) no change of posting b) minor changes c) major changes d) usual rotations stopped till further notice
11. Do you believe that learning of an aesthetic skills (airway management, invasive line placements) is being affected by the ongoing pandemic?
a) Yes b) No c) Unsure
12. Have you been attending different webinars on COVID 19 organized by several societies?
a) Always b) Frequently c) Infrequently d) Never e) unaware of such activities
13. Are online platforms like Zoom/Hangout Meet/Skype, etc., being used for teaching/seminars in your department?
a) Yes b) No c) Planning but not implemented
14. How has the schedule of your self- study been affected in the current situation?
a) Getting more time for self- studies b) Getting less time for self- studies c) No change
15. How has your thesis (dissertation) work been affected in the current situation?
a) No effect b) unable to get ethical clearance as ethics committee meetings are deferred c) unable to do cases related to my topic d) Any other problem (please specify)
16. Have you published/attempted to publish any literature or made any innovations related to COVID 19?
a) Yes b) No c) In the process d) Conveyed my ideas to my Guide/Superiors
17. What has been the effect of the pandemic on your exam schedules?
a) Exams have been postponed b) Exams will be conducted on time c) No information yet.
- 18) Have you gone through the ISA advisory and position statement in the setting of the COVID 19 pandemic?
a) Yes b) No c) Heard/seen the same but haven't gone through it
- 19) Have you incorporated the guidelines suggested by ISA/or modified it as per local protocols in your routine practice?
a) Yes b) No c) Our hospital/Institute has its own guidelines which are being followed d) Unable to (Please specify reasons)
- 20) What are the positive learning points from this situation:
 - a. Improved preparedness for similar situations in future
 - b. Inculcating leadership qualities
 - c. Underlined the importance of anesthesiologists among medical professionals
 - d. all of the above
 - e. None of the above
 - f. any other (Please specify)