

Study on airway assessment practices for elective procedures during pre-anesthetic evaluation in COVID-19 pandemic- A national online survey (SAFE PAC Survey)

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Abstract

Background and Aims: A pilot study among anesthesiologists, revealed a wide variation among individual practices including skipping pre-anesthetic airway assessment during COVID-19 pandemic because of the fear of getting infected. Risk of infection during pre-anesthetic airway assessment has not been studied. The primary objective of the survey was to evaluate the practices of airway examination by anesthesiologists during this pandemic period. Secondary objectives were to study the effects of institutional factors and other individual practices on risk modification and the incidence of COVID-19 infection among anesthesiologists.

Material and Methods: A survey was conducted using a pre-validated questionnaire comprising of 35 questions. The questionnaire was circulated among 4676 members of the Indian Society of Anaesthesiologists (ISA) through Google Forms by email.

Results: Of the 4676 members contacted via email, 470 were returned undelivered. From the remaining 4206 questionnaire recipients, 456 completed responses were obtained giving a response rate of 10.8%. Percentage, mean and standard deviation were calculated using EZR software. The conduct of pre-anesthetic airway assessment has decreased by 31.7% during the pandemic, leading to 5.2% of participants encountering unanticipated difficult airway. Among the respondents, eight percent were infected.

Conclusion: Avoidance of preoperative airway assessment by anesthesiologists during the COVID-19 pandemic has led to rising unanticipated difficult airway undermining the patient safety. Adherence to recommended practices ensures safety from risk of COVID-19 infection.

Keywords: Aerosol generating procedure, clinical practice, COVID-19 pandemic, mallampati test, personal protection equipment, pre-anesthetic airway assessment, questionnaire survey

Introduction


Proper pre anesthetic airway assessment by anesthesiologist, the *sine qua non* for the safe practice of anesthesia requires examination of the oral cavity, nose, jaws, and neck from the

front and sides of the patient. The sensitivity and specificity of the tests used for airway assessment varies from 24% to 51% and 87% to 93% respectively.^[1] Among the tests, modified Mallampati test had the highest sensitivity which requires full mouth opening with the eyes of the examiner at the

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level of oral cavity. During this pandemic the procedure of airway assessment exposes the examiner to the potential risk of infection from asymptomatic patients also. An adverse airway event in a patient due to the practice of avoiding pre anesthetic airway examination amounts to lack of duty of care. Innovations in airway assessment, with a view to reducing risk of exposure are the need of the hour during this pandemic.

COVID-19 infection is a public health emergency of international concern (PHEIC) with 21% of health workers getting the infection worldwide. Strict adherence to the use of personal protective equipment (PPE), including mask, eye protection, gown and gloves, is highly effective in limiting droplet and contact transmission.^[2] In the battle against the pandemic, Health Care Worker (HCW) is the frontline warrior. As specialists dealing with patient's airway, anesthesiologists are a high-risk category for getting infected. We are vulnerable at different points of exposure such as pre anesthetic assessment, perioperative care and critical care management. Emerging evidence substantiates this high risk of COVID-19 infection to anesthesiologists while conducting aerosol generating procedures.^[2]

Preanaesthetic airway examination of patients for elective surgery during the pandemic has not received sufficient attention as a cause for transmission of COVID-19. Recommendation from the Joint Task Force of the Chinese Society of Anaesthesiology provides directions on management of patients in the preoperative clinic. These recommendations are silent on the conduct of airway assessment of a COVID-19 positive or suspect patient.^[3] The recommendations made by Indian society of Anaesthesiologists does not specify the conduct of airway assessment.^[4] Proper wearing of masks and devices and frequent sanitization of hands and distancing norms among patients and clinicians will reduce the actual risk compared to the high perceived risk of anesthesiologists.

This novel email questionnaire survey was designed and validated to study the current practice of pre anesthetic airway examination during the pandemic compared to the pre pandemic period. During this pandemic, an email questionnaire survey among the practicing anesthesiologists is the safer and prudent method of study.

The results of the survey may be practice changing and potentially enable us to formulate a framework for best practice during this pandemic.

Material and Methods

The aim of the study was to formulate a framework for best practice of airway assessment based on the analysis of the

response of anesthesiologists participating in this study. The primary objective was to compare the practice of airway examination by anesthesiologists in the pandemic period with pre pandemic period and assess if the safety of the doctor and/or patient was compromised. Secondary objectives were to study the effects of institutional factors and other individual practices on risk modification and the incidence of COVID-19 infection among anesthesiologists of Indian origin.

This survey was approved by the Institutional Ethics Committee and Institutional Review Board with the number IEC/MOSC/519/2020 and was registered with the Clinical Trial Registry of India with the number CTRI/2020/10/028696. The instrument used was a questionnaire using Google Forms mailed to anesthesiologists. Consent was mandatory to join the survey and no personal information was collected. Based on clinical experience, the investigators generated twenty-seven item questions on the topic in seven domains. These were discussed among five anesthesia consultants from different teaching institutions and hospitals who contributed twenty more items. Being in the middle of the pandemic, discussions were accomplished electronically via Google Drive, WhatsApp and verbal communication via telephone. One investigator initiated item reduction and five other specialists together analyzed the 47 questions. Thus, forty-one questions were selected and shared among 20 anesthesiologists for pretesting. The item content validity index for each question was calculated based on the response of the seven anesthesiologists who responded on the relevance, essentiality and clarity of the items. The questions with an item content validity index of >0.78 were included to in calculating the scale content validity index, found to be 0.97. A pilot study was conducted with the validated 35 questions among 11 staff anesthesiologists, seven postgraduates of our department and two surgeons of our institution, respectively, for feasibility and face validity. The survey proper included all the 35 questions [See Appendix 1] fewer than nine sub sections titled separately. There were three open-ended questions, three with yes/no options, 19 with responses on the Likert scale and nine with multiple options. The advance announcement about the survey was done through electronic and social media among anesthesiologists on 6 October 2020. By convenience sampling a sample size (n) of 392 completed responses were anticipated with margin of error (e) of five percent and total population of anesthesiologists being approximately 20,000(N) using the formula viz.,

$$n = N/(1 + Ne^2)$$

Expecting a minimum response rate of ten percent, at least 4000 email communications need to be sent to the study

population. The questionnaire link was shared by email on 6 November 2020, among the randomly selected fourth member, listed in the membership register of the Indian Society of Anaesthesiologists. Of the 4676 emails sent 470 were returned undelivered. To those who did not respond, two email reminders were sent a week apart. The survey was closed on 6 December 2020. Participants were requested to fill the questionnaire only once. All analyses were performed using EZR software.

Results

Among the 4206 members contacted, 456 completed responses were obtained, giving a survey response rate of 10.8%. Fifteen responses were from anesthesiologists, who were not currently working and two duplications. These 17 responses were excluded, amounting to 439 valid responses, as shown in the flowchart labelled Figure 1. The demographic details of the respondents are as in Table 1 given below.

The survey respondents were from all states, with a maximum from Kerala with 216 (49.2%) participants. Almost all the participants, 411 (93.6%), had access to personal protective equipment (PPE). Regarding safety precautions available in their workplace, 320 (72.9%) were satisfied, while 35 (10%) were dissatisfied. The rest were neither satisfied nor dissatisfied. About COVID specific training on PPE precautions to be used, almost 305 (69.5%) responded positively. Reverse Transcription Polymerase Chain Reaction (RT-PCR) and Truenat testing together constituted 365 (83.1%) of the COVID specific test prior to the elective procedure, while rapid antigen testing was done in 47 (10.7%). Majority of the respondents, 308 (70.1%), conducted pre anesthetic airway assessment of patients in non AC settings. Among them, 53 (17.2%) reported using poorly ventilated rooms. Nearly three-fourths of the respondents, 327 (74.5%), used to always conduct pre anesthetic airway assessment for elective procedures during the pre-pandemic period, whereas 188 (42.8%) did the same during the pandemic period. The incidence of the unanticipated difficult airway arising from lack of pre anesthetic airway assessment was reported by 35 (5.2%) respondents. In the pre pandemic period, Mallampati scores and degree of mouth opening were assessed by 346 (78.8%) and 345 (78.6%) respectively.

In the context of a pandemic, this dropped to less than half the respondents to 183 & 190 (41.7% & 43.3% respectively). Upper lip bite test, though, remained fairly underutilized in both pre pandemic and pandemic periods by 70 & 43 anesthesiologists (15.9% and 9.8% respectively). Wilcoxon Signed Rank test was performed, for any significant difference in

the average airway examination score between the pre pandemic and pandemic time points as data violates normality. A significant reduction in the pre anesthetic airway assessment score between the pre pandemic and pandemic time points was observed as given in the Table 2. and Box Plot given in Figure 2.

Preoperative airway assessment in the pandemic period was considered a high risk procedure by 356 (81.1%) participants.

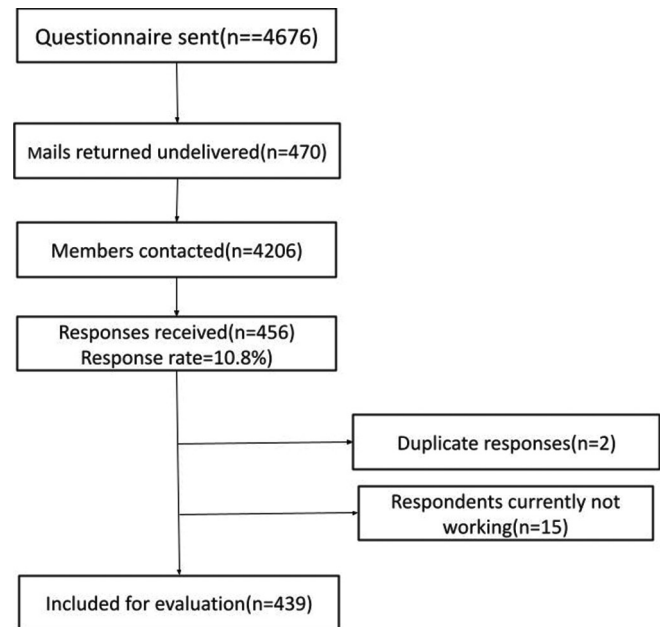


Figure 1: Flowchart depicting recruitment of eligible respondents and final evaluation of survey

Table 1: Demographics of the respondents of the survey

Variable	Type of Variable	Frequency	Percentage
Sex	Male	257	58.5
	Female	182	41.5
Age (In years)	>60	43	9.8
	31-40	122	27.8
	41 to 50	137	31.2
	51 to 60	71	16.2
	<30	66	15.0
Years of experience	<5	111	25.3
	>10	62	14.1
	>15	210	47.8
	>5	56	12.8
Current designation	Consultant	202	46
	Professor	71	16.2
	Associate Professor	31	7.1
	Assistant Professor	46	10.5
	Senior resident	2	0.5
	Post Graduate student	1	0.2
Current Institution	Other:(different designations)	86	19.5
	Govt. Hospital (Teaching)	105	23.9
	Govt. Hospital (Nonteaching)	34	7.7
	Private Hospital (Teaching)	177	40.3
	Private Hospital (Non-teaching)	90	20.5
	Freelancer	26	5.9
	Other: (different institutions)	7	1.7

On a zero to ten scale, the risk of COVID-19 transmission due to pre anesthetic airway assessment was perceived to be five to ten, by 317 (73.6%) participants of the survey. Among the respondents, 35 (8%) were infected but the source remained unclear in most of the cases.

On a Likert scale, 247 (56.3%) were in agreement that complete PPE must be worn by anesthesiologist during preoperative airway assessment in the setting of the pandemic, whereas 97 (22.1%) disagreed. A majority (341 respondents, 77.7%) were of the view that RT PCR testing for COVID should be done for patients scheduled for elective surgery, before being sent for pre anesthetic evaluation, while 46 (10.5%) disagreed. Almost all 414 (96.5%) agreed that patients should be wearing face masks during pre-anesthetic interviews. The practice of sanitization of hands after pre anesthetic evaluation by clinician was agreed upon by 434 (98.8%) respondents. Regarding the use of face shield by patients during pre anesthetic assessment, 235 (53.5%) respondents agreed, while 70 (16%) disagreed and 134 (29.8%) remained neutral. On allowing a by-stander during pre anesthetic assessment of an independent adult, 165 (37.6%) agreed while 204 (46.5%) disagreed.

Innovative techniques of airway assessment suggested by the respondents included use of videoconferencing,

Table 2: Airway management score (median and interquartile ranges)

Time points (periods)	Median	Q1, Q3*	Z statistic	P
Pre pandemic	18	16, 19	-13.36	<0.001
Pandemic	15	11, 17		

*Q1 & Q3 are interquartile ranges

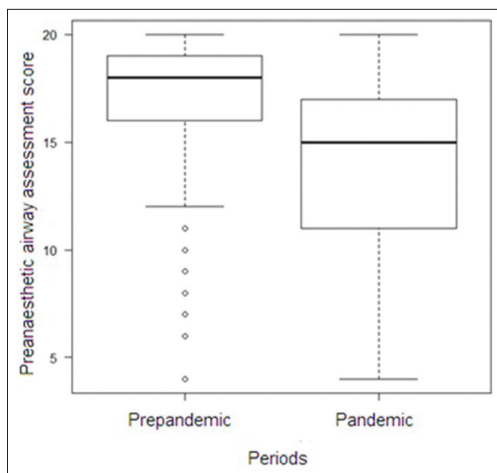


Figure 2: Box plot showing the difference between pre anesthetic airway assessment score (y axis) in the pre pandemic and pandemic time points (x axis). The scores were arrived from the averages of responses on the Likert scale (ranging from 1 to 5) to questions 14 to 17 (pre pandemic) and 25 to 28 (pandemic) periods. Median shown as the horizontal dark line in the box

teleconsultation, examining by standing behind the back of the patient facing mirror, safe distance of at least a meter, wearing face shield by patient during airway examination, using WhatsApp to view airway pictures live, using transparent partition between the physician and patient, examine airway on table only, evaluating previous case notes on airway management, examining selfies of patients with mouth kept open, chest auscultation by standing behind patient, conducting airway examination towards the end of the assessment and positioning patient near the door with fan blowing from behind the examiner.

During pre anesthetic evaluation, the majority of respondents opted for wearing N 95 masks with decreasing preference for other devices as shown in bar chart given in Figure 3.

To prevent direct contact with the virus the combination of wearing N95 mask, single pair of gloves and face shield was the most popular combination method of protection chosen by respondents as given by bar chart in Figure 4.

Discussion

This is the first survey which that has revealed that the safety of airway management of patients posted for elective surgery has considerably decreased due to a reduction in the preoperative airway assessment in the pandemic period.

The perioperative period has been recognized as a possible setting for SARS COVID-19 transmission. This demands hospital-wide guidelines for health care professionals to manage exposure and implement measures to mitigate

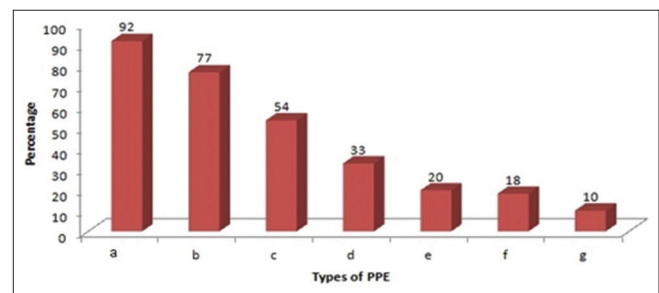


Figure 3: Maximum preference of personal protection equipment (PPE) by respondents of the survey (a = N95 mask, b = Face shield, c = single pair of gloves, d = surgical face mask, e = goggles, f = shoe cover, g = double pair of gloves) Total respondents included-439

Data of Figure 3

a	403	0.92	92
b	337	0.77	77
c	235	0.54	54
d	144	0.33	33
e	87	0.20	20
f	80	0.18	18
g	44	0.10	10

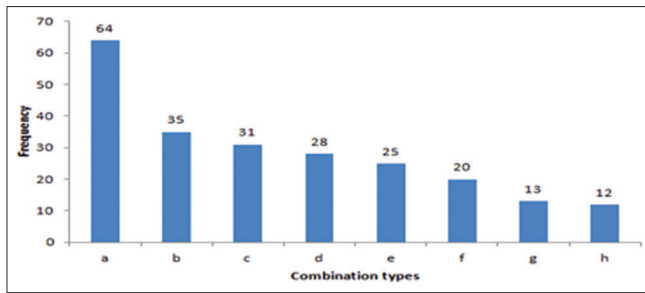


Figure 4: Preference of survey respondents regarding combinations of selection of personal protection equipment (a = N 95 mask, Face shield or visor, Single pair of gloves, b = N 95 mask, Face shield or visor, Single pair of gloves, Surgical gown, c = N 95 mask, Face shield or visor, d = N 95 mask, Surgical face mask, Face shield or visor, Single pair of gloves, e = N 95 mask, f = N 95 mask, Surgical face mask, Face shield or visor, Single pair of gloves, Surgical gown, g = N 95 mask, Surgical face mask, Face shield or visor, h = N 95 mask, Goggles, Face shield or visor, Single pair of gloves) Total respondents = 439

Data of Figure 4

a	64	0.145785877
b	35	0.07972665148
c	31	0.07061503417
d	28	0.06378132118
e	25	0.0569476082
f	20	0.04555808656

transmission.^[5] Cook *et al.*^[6] have defined aerosol generating medical procedures (AGMP) as any procedure carried out on a patient that can induce the production of aerosols of various sizes, including droplet nuclei. Brown. *et al.*,^[7] has highlighted the lack of precision in the definition for aerosol generating procedures. According to him, performing or being exposed to a tracheal intubation is most consistently associated with transmission of SARS Co-V. The Italian Coronavirus diseases 2019 document recommends any airway management procedure to be managed electively rather than as an emergency.^[8] Detailed pre anesthetic assessment of airway is a prerequisite of atraumatic and safe airway management during anesthetic induction of elective surgical cases. This survey was designed to study the airway assessment practice of anesthesiologists in patients for elective surgery during this pandemic, to suggest a framework on pre anesthetic airway assessment.

In this survey, the majority of the respondents had more than ten years of experience in anesthesia currently working in teaching institutions. The majority of the participants had access to PPE and was satisfied with the safety precautions in their workplace. Most of the participants received training on using PPE. According to survey results, patients for elective surgery had an assessment of the airway mostly after RT PCR or Truenat test results were available. This may take three to five hours for the declaration of results. Whether the tests were conducted in the institution or outside was not part of the study. The practice in our institution is to consider the results valid for 72 hours.

The majority of the respondents conducted airway assessment in non-air-conditioned settings. This corresponds to the high

level of awareness and compliance among participants and the involved institutions about the transmission process of the pandemic and preventive steps adopted by individual caregivers. During physical examination or triage when caregiver and patient are within one meter, World Health Organization (WHO) has advised use of the mask, hand hygiene and respiratory etiquette by healthcare workers as infection control measures during any pandemic prone acute respiratory disease.^[9] Standard precautions are to be adopted for all patients when COVID-19 is suspected.^[10,11] Standard precautions include hand and respiratory hygiene, the use of appropriate PPE according to a risk assessment, injection safety practices, safe waste management, proper linens, environmental cleaning, and sterilization of patient-care equipment. The majority of the respondents believed that during the pandemic, preoperative airway examination is a high-risk procedure which is consistent with the studies on the emission of respiratory pathogens based on the fluid dynamics hypothesis by Lydia Bourouiba.^[12] Jackson T *et al.*,^[13] in a rapid systematic review, has classified coughing as one among nineteen possible aerosol generating procedures. Even though PPE was available for the majority of respondents, only two thirds considered wearing it during the preoperative airway examination. The reluctance to wear PPE may be due to the cumbersome nature of the same, reduced vision or due to improper assessment of the risk of contamination with COVID-19. Mehanna *et al.*^[14] had concluded that female participants and those having higher self-efficacy, higher perceived benefits and higher perceived severity were more likely to be willing to adhere to the protective measures against COVID-19. Most of the respondents were in agreement with conducting preoperative airway examination only after RT-PCR test results are available. This happens to be our institutional practice now. The sensitivity, specificity, timing and quality of samples collected for the RT-PCR and Truenat tests may be considered while interpreting the results. Only half of the respondents agreed on patients wearing face shields during pre anesthetic interviews. One third of respondents differed in allowing an informant for an independent adult during pre anesthetic interview. This shows the lack of planning among the respondents in structuring the conduct of the examination by prior telephonic/video calls or other innovative techniques to shorten the duration of the interview and physical examination, including an airway examination.

This survey with an adequate sample size being conclusive of the clinical practice highlights the importance of classifying aerosol generating procedures. Currently, only iatrogenic procedures using an instrument are seen listed as aerosol generating procedures, the most common being tracheal

extubation. Brown *et al.*^[7] in their quantitative evaluation of aerosol generation during tracheal intubation and extubation, has found that the amount of aerosols produced during extubation is 15 fold more than that during intubation and 35 fold less than during a volitional cough.

This survey has detected a reduction in compliance among anesthesiologists to conduct pre anesthetic interviews, including airway examination during this pandemic. The precautions of distance, duration and masking during pre anesthetic interview and airway examination do not reduce the high potential for spontaneous aerosol generation from asymptomatic patients with false negative RT PCR test results. Talking loud as well as whispering, coughing and sneezing by asymptomatic patients or by the informant leads to aerosol generation. This might have led to a significant reduction in pre anesthetic interview and airway examination during this pandemic as demonstrated in this survey. Taking adequate precautions and consistent strict adherence to them without any laxity will definitely ensure a safer airway examination. Using innovative methods for airway assessment improves clinician safety and a safe anesthetic experience for the patient. A prior written online consultation will help reduce the duration of contact during a face to face interview.^[15] Therefore, a dual approach of infection control aiming at preventing aerosolized and droplet transmission should be instituted during the preoperative interview and airway examination.^[8] Face to face preoperative airway assessment, a potential AGP, can be made safer by proper assessment of the risk of contamination from virus, wearing the necessary PPE and adhering to the pandemic norms of distancing, reducing the duration of contact, driving of air, disinfection.

Practical modifications in airway assessment during COVID-19 have been suggested by Kumar *et al.*^[16] Based on our survey, we have suggested a framework for safe pre anesthetic assessment [see Appendix 2]. These suggestions may be refined by a task force comprising experts from anesthesia societies, for the development of airway assessment guidelines during pandemics in future.

Limitations

Restricting the survey to pre anesthetic airway examination of patients posted for elective surgery might have affected the results of the survey. The survey non response rate could not be estimated. Random selection of the respondents from the available list of members could not prevent a non-coverage bias due to the poor availability of high-speed Internet in peripheries and the busy nature of the work of the respondents.

Conclusion

There was a statistically significant reduction in pre anesthetic airway assessment during the pandemic period, leading to adverse airway events. Proper assessment of the risk of contamination on a case-by-case basis helps in the selection of appropriate PPE, thus reducing the risk of transmission. Innovative methods have a definite role in evolving virtual pre anesthetic airway assessment. The incidence of COVID-19 among the respondents was eight percent. A framework for safe conduct of pre anesthetic airway assessment during the pandemic is suggested.

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Conflicts of interest

There are no conflicts of interest.

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Appendix 1- Survey Questionnaire

Section 1 Summary of Sections

Section 2 Introduction

Section 3 Informed consent form (Items 1 & 2)

1. Do you agree to participate in this survey?
Please select the option “yes” to proceed with the survey-Yes/No
2. Your email for feedback on survey (optional)

Section 4 About you (Items 3 to 7)

Please select an option

3. Age in years less than 30/31 to 40/41 to 50/51 to 60/>60
4. Gender Male/Female
5. How many years of experience do you have in Anaesthesiology <5/>5/>10>15
6. Which state/union territory do you practice in? * Check all that apply.
AndhraPradesh/ArunachalPradesh/Assam/Bihar/Chhattisgarh/Goa/Gujarat/Haryana/HimachalPradesh/Jharkhand/
Karnataka/Kerala/MadhyaPradesh/Maharashtra/Manipur/Meghalaya/Mizoram/Nagaland/Odisha/Punjab/
Rajasthan/Sikkim/Tamilnadu/Telangana/Tripura/Uttarakhand/Uttar Pradesh/West Bengal/Andaman and Nicobar/
Chandigarh/Dadra and Nagar Haveli and Daman and Diu/Delhi/Jammu and Kashmir/Ladakh/Outside India
7. What is your current designation?
Consultant/Professor/AssociateProfessor/Assistant Professor/Senior resident/Post Graduate student/Other:

Section 5 About your current Institution (Items 8 to 13)

Please select an option

8. What is the type of institution you are currently working at?
Government Hospital (Teaching)/GovernmentHospital (Nonteaching)/PrivateHospital (Teaching)/Private
Hospital (Non teaching)/Freelancer/Other:
9. Is adequate Personal Protective Equipment (PPE) available to you? Mark only one oval. Yes/No
10. Are you satisfied with the safety precautions available at your workplace? Please select one option
1. = Extremely Dissatisfied, 2 = Dissatisfied, 3 = Neither Satisfied nor Dissatisfied, 4 = Satisfied,
5 = Fully Satisfied
11. Have you received COVID specific training on Personal Protective Equipment precautions to be taken while examining
patients? Please select one option Yes/No
12. Which COVID Test is done for patients prior to elective procedures in your institution during the current pandemic?
RT-PCR/True Nat/Genexpert/Rapid Antigen testing/Antibody testing/Other:
13. Where do you mostly conduct pre anesthetic checkups in your institution? AC room with HEPA filter/AC room/Well
ventilated Non AC room/Poorly ventilated Non AC room/Ward/Other:

Section 6 About your airway assessment practice in pre pandemic period (Items 14 to 17)

Please rate on a scale of 1-5, with scores

1 = Never, 2 = Rarely, 3 = Occasionally, 4 = Frequently And 5 = Always.

14. Did you perform pre anesthetic airway assessment for elective cases in the pre pandemic period?

15. Did you include assessment of Mallampati grade in airway assessment in the pre pandemic period?
16. Did you include assessment of degree of mouth opening in airway assessment in the pre pandemic period?
17. Did you include assessment of upper lip bite test in airway assessment in the pre pandemic period?

Section 7 about your safety during practice of airway assessment in the pandemic period

(Items 18—24)

Please rate on scale 1-5, with scores,

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree

18. Preoperative airway assessment in the pandemic period is a high risk procedure
19. Complete PPE should be worn by anesthesiologist while doing preoperative airway assessment during this pandemic.
20. Patients should be tested for COVID (RT-PCR) before being sent for pre anesthetic evaluation
21. Patients must be wearing a face mask during pre anesthetic interview Mark only one oval.
22. Patients must be wearing a face shield during pre anesthetic airway assessment
23. Sanitization of hands should be practiced by clinician after pre anesthetic evaluation
24. Bystander (wearing facemask and face shield) should be allowed during pre anesthetic evaluation of an independent adult

Section 8 about your practice of airway assessment in pandemic period (Items 25 to 33)

(For items 25-28, please rate on scale 1-5, with scores,

1 = Never, 2 = Rarely, 3 = Occasionally, 4 = Frequently and 5 = Always)

25. Do you conduct pre anesthetic airway assessment during this COVID-19 pandemic ?
26. Do you include assessment of Mallampati grade during airway assessment in the pandemic period?
27. Do you include assessment of degree of mouth opening during airway assessment in the pandemic period?
28. Do you include assessment of upper lip bite test during airway assessment in the pandemic period?
29. If you use any other safer technique/innovative technique for airway assessment during pre anesthetic evaluation in the pandemic period, please describe? If no, mention N/A
30. What precautions do you use during pre anesthetic evaluation of a patient's airway? (If more than one option, please choose the options applicable) Check all that apply. N95 mask/Surgical face mask/Goggles/Face shield or visor/Single pair of gloves/Double pair of gloves/Headgear/Surgical gown/Shoe cover/Full body suit/Powered air purifier respirator (PAPR)/ Other:
31. On a scale of zero to ten, what is your perceived risk of acquiring COVID-19 infection during pre anesthetic airway assessment?
0. 1 2 3 4 5 6 7 8 9 10
32. Were you infected any time with COVID-19, which was confirmed by tests? Yes/No
33. If answer to the above question is yes, what could be the source of infection? If no, mention N/A

Section 9 about patient safety during your practice of airway assessment in pandemic period

(Items 34-37)

For items 34 to 36, please rate on scale 1-5, with scores

1 = Never, 2 = Rarely, 3 = Occasionally, 4 = Frequently and 5 = Always

34. Do you insist on hand sanitization by patients after pre anesthetic evaluation?
35. Do you sanitize your hands before and after pre anesthetic evaluation?

36. Due to lack of proper pre anesthetic airway assessment in the pandemic period, did you encounter difficulty in airway management of any patient?
37. If you encountered difficulty in airway management due to lack of airway assessment during this pandemic period, please mention the details. If never, please mention N/A.

Appendix 2- Suggested framework for safe conduct of pre anesthetic airway assessment during pandemic

Airway management (mask ventilation, direct laryngoscopy, tracheal intubation, tracheal suctioning, extubation, noninvasive ventilation, use of high flow nasal oxygen) is an Aerosol Generating Procedure (AGP) while pre anesthetic airway assessment is a Potential AGP

1. Pre anesthetic airway assessment should not be skipped for elective or emergency cases
2. Bystander restriction to be implemented during face to face consultation. Exceptions are for differently abled and minor patients
3. Institutional factors enhancing safety include use of well-ventilated rooms, consider use of transparent partition between physician and patient during interview, ensuring adequate supply of PPE, adequate training of staff, strict enforcement of safety norms and specific diagnostic testing before pre anesthetic interview
4. Innovative methods like virtual preoperative airway examination, teleconferencing, incorporating principles of distance from patient, duration of contact, driving air away and disinfection, disease severity and demarcation
5. Assess risk of infection for each case individually, inclusive of all possible pathways for rational selection of PPE such as N95 mask, goggles/face shields, gloves, gown/apron, full body suit, shoe covers etc.
6. Clinician factors improving safety mandates proper use of PPE, safe distancing, regular hand hygiene and minimizing duration of contact
7. Diagnostic testing specific to the pandemic should be done prior to pre anesthetic assessment. Up-to-date knowledge of the different diagnostic and confirmatory tests in relation to the epidemiology of the pandemic is necessary for proper interpretation
8. Infection prevention and control measures need to be strictly followed by healthcare staff as a routine in clinical settings, irrespective of their status of infection.