

Perception about Virtual Endocrine Training among Endocrine Residents

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ABSTRACT

Background: COVID-19 has jolted the world order with the disruption of education at all levels. Present disruption in medical education has opened doors to virtual platforms. There is a dearth of studies, evaluating the perception of medical students about virtual learning. We have conducted a cross-sectional study to understand the perception of endocrinology residents with regard to virtual training.

Materials and methods: This study is a cross-sectional online survey done in April 2020. A total of 46 endocrine residents, participated in this survey. Total 05 questions were asked in this survey, whether they believe virtual endocrine training is required in present COVID-19 times or not, the format of training, method of teaching, preferred topics requiring coverage, and online assessment.

Results: All 46 (100%) participants agreed with the need for virtual endocrine teaching. Of the total 46 participants, their seniority of endocrine training was 1st year ($n = 21$, 45.65%), 2nd year ($n = 17$, 36.96%), and 3rd year ($n = 8$, 17.39%). Most preferred topics were endocrine imaging ($n = 9$, 19.57%) and nuclear medicine ($n = 9$, 19.57%) with pituitary as least preferred ($n = 1$, 2.17%). Of the total, 50% of residents wanted virtual faculty lectures, 47.8% opted for virtual clinical case discussions. Out of 46, 97.8% of residents wanted virtual platform informal assessment of students. There was no statistical significance between the choice of a topic among different endocrine residents according to the seniority of their training.

Conclusion: Our study has shown that there is a felt need for virtual training among endocrinology residents in India. Imaging and nuclear studies are the specific topics that endocrine students want to learn through faculty lectures, irrespective of seniority as endocrine students. This study can be used while planning virtual endocrine curriculums in the future.

Keywords: Endocrine training, Perception of endocrine residents, Virtual learning.

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BACKGROUND

COVID-19 has jolted the world order and it seems to be a long battle for humanity. As of July 3, 2020, there are 10,533,779 confirmed cases of COVID-19 worldwide and it includes 512,842 deaths.¹ Suffering of this pandemic is not only limited to ongoing crises, but it would have long drawn consequences for decades to come. The conventional systems of economics, entertainment, sports, and education are bound to see a strategic shift. Social distancing and virtual platforms would be new norms in the post-COVID-19 era.² Education at all levels has taken a major hit due to this pandemic and about 80% of educational institutes the world over have closed.³ Medical education is not insulated from these disruptions and the majority of medical training institutes have suspended their training across India.⁴ Medical education has certain inherent peculiarities, wherein a limited time, intricate aspect of human anatomy, physiology, pathology, diagnostics, preventive, and therapeutic aspects has to be learned. The amount of disruption which has happened in medical education due to this pandemic is substantial and it is expected to continue in near future.⁵ It is a time where we need to have futuristic planning and include technologies in medical education.⁶ Virtual platforms are a need of an hour and need to be adapted to medical teaching.⁷ The utilization of virtual platform for medical education has started in some institutes and need to be utilized maximally.^{8,9} So far, there is limited literature available with respect to the utilization of the virtual platform in medical education. Few studies have shown good responses from student's and teacher's perspectives.⁴ During the course of adaptations to virtual learning technologies, there is a need for continuous research in the area as shortcomings in these

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technologies, specific to medical education need to be identified.¹⁰ India has a robust endocrine training curriculum, where residents across institutes have access to the best training curriculum and exposure for research. However, there have been few lacunae like national level uniform curriculum and impetus for research which has been identified in the past.¹¹ Present time is an appropriate opportunity to build a robust virtual endocrine training curriculum in India. We have conducted a cross-sectional study to understand the perspective of endocrinology residents with regard to virtual training.

MATERIALS AND METHODS

This study is a cross-sectional online survey done in April 2020. A questionnaire was uploaded on Google Forms and circulated among endocrine residents across India. A total of 46 endocrine

residents participated in this survey. Total 05 questions were asked in this survey and they included whether they believe virtual endocrine training is required in present COVID-19 times or not, the format of training, method of teaching, preferred topics requiring coverage, and online assessment. The data were analyzed using Jamovi software (jamovi 2020 version 1.2).¹² Categorical variables were presented as graphs. A Chi-square test of association was done for categorical variables to find an association. *p* value < 0.05 was considered significant.

RESULTS

Total 46 endocrinology residents pursuing endocrine training at various institutes participated in this survey. All 46 students were pursuing 03 years structured endocrinology curriculum. All 46 (100%) participants agreed to the need for virtual endocrine training (Fig. 1). The data were also analyzed according to seniority of training using descriptive statistics. Of the total 46 participants, breakdown of seniority was 1st year (*n* = 21, 45.65%), 2nd year (*n* = 17, 36.96%), and 3rd year (*n* = 8, 17.39%). Baseline characteristics of the study population have been described in Table 1. Analysis of data according to topic in endocrinology which needs maximum

reinforcement revealed, residents opting endocrine imaging (*n* = 9, 19.57%), laboratory tests (*n* = 4, 8.70%), reproductive endocrinology (*n* = 5, 10.87%), endocrine genetics (*n* = 2, 4.35%), nuclear medicine (*n* = 9, 19.57%), pituitary (*n* = 1, 2.17%), thyroid (*n* = 4, 8.70%), adrenal (*n* = 3, 6.52%); bone and calcium metabolism (*n* = 5, 10.87%); diabetes mellitus (*n* = 2, 4.35%), and recent advances in endocrinology (*n* = 2, 4.35%) (Fig. 2).

Response of the endocrine students about the mode of virtual teaching was also analyzed with descriptive statistics. Of the total, 50% of students opted for virtual faculty lectures, 47.8% opted for virtual clinical case discussions, and 2.2% opted for residents presenting seminars on a virtual platform. None of the residents opted for virtual platform journal clubs. Of the total, 50% of students wanted anytime access to pre-recorded videos as a method of virtual learning, 29.5% opted for live virtual conference, 18.5% opted for meet the professor format, and 2.3% wanted sir clear my doubts format where students submit their queries for answers. As depicted in Figure 3, 97.8% of students wanted virtual platform informal assessment of students at intervals.

Table 1: Baseline characteristics and choice of the topic of the study population

	Overall (N = 46) (%)
Year of training	
1st year	21.0 (45.7)
2nd year	17.0 (37.0)
3rd year	8.0 (17.4)
Which topic needs maximum reinforcement	
Endocrine imaging	9.0 (19.6)
Laboratory tests	4.0 (8.7)
Reproductive endocrinology	5.0 (10.9)
Endocrine genetics	2.0 (4.3)
Nuclear medicine	9.0 (19.6)
Pituitary	1.0 (2.2)
Thyroid	4.0 (8.7)
Adrenal	3.0 (6.5)
Bone and calcium metabolism	5.0 (10.9)
Diabetes mellitus	2.0 (4.3)
Recent advances in endocrinology	2.0 (4.3)

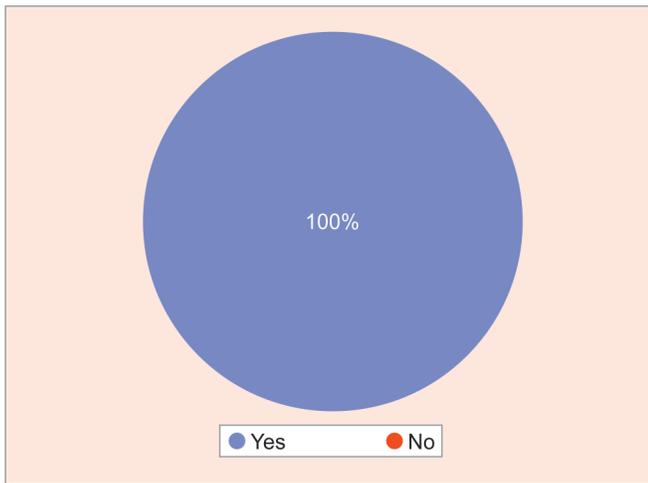
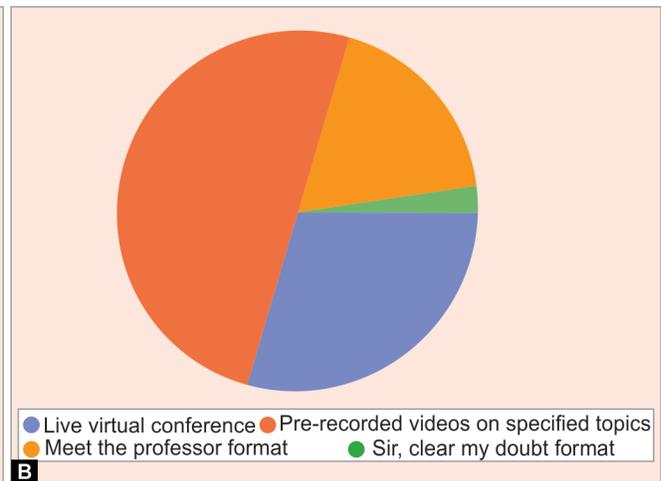
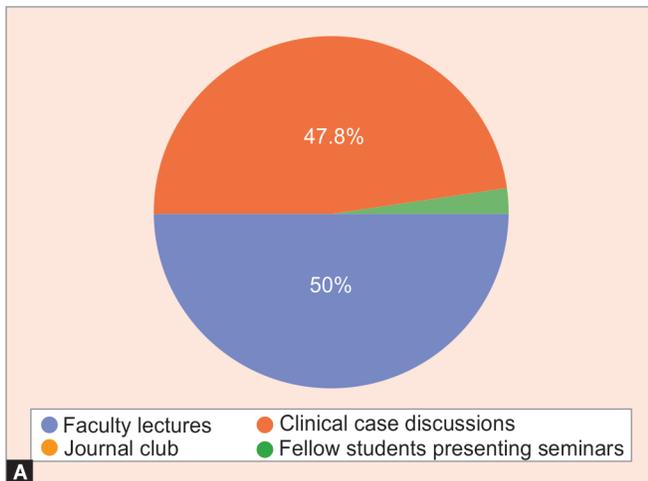


Fig. 1: Chart representing response of endocrine students regarding need for virtual endocrine training



Figs 2A and B: Chart representing desired format of virtual endocrine teaching

A Chi-square test of association was done to analyze the association with choice of topic and seniority of training. Observed and expected values were tabulated and Chi-square value and *p* value were derived as shown in Table 2. The *p* value for the Chi-square test of association was 0.185 which means there was no significant association within variables.

DISCUSSION

This study was a cross-sectional survey to assess the perception of endocrine residents toward virtual teaching. Present disruption in education curriculum due COVID-19 situation was the genesis for the present study. An extensive literature search revealed that there are no studies to date assessing the perception of virtual training among endocrine residents. In our study, all 46 (100%) participants accepted that there is a need for virtual endocrine training. In a study by Agarwal and Kaushik, 97% of medical students have liked online teaching sessions.⁴ Most common topics which endocrine residents desired to be reinforced included endocrine imaging (*n* = 9, 19.57%) and nuclear medicine (*n* = 9, 19.57%). Reproductive endocrinology and bone and calcium metabolism were opted by 5.0 (10.9%). Virtual teaching on topics of laboratory tests and thyroid was opted by 4.0 (8.7%). Khandelwal et al. in the PEER India study have also assessed the

quality of endocrine training with respect to clinical, laboratory, and research aspects. In this study, they have shown that there was a perceived shortcoming with regard to endocrine laboratory and research training.¹³ They have not assessed the perception of

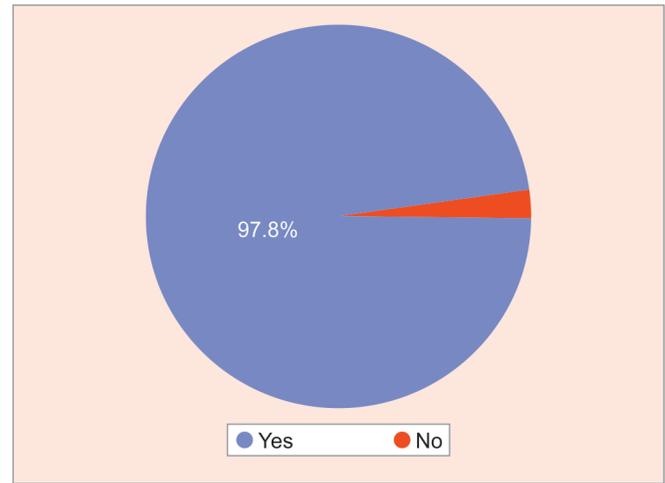


Fig. 3: Students response to whether there should be informal virtual online assessment

Table 2: Contingency tables representing Chi-square test of association

Which topic needs maximum reinforcement		Year of training			Total
		1st	2nd	3rd	
Endocrine imaging	Observed	6	2	1	9
	Expected	4.11	3.33	1.57	9.00
Laboratory tests	Observed	3	1	0	4
	Expected	1.83	1.48	0.70	4.00
Reproductive endocrinology	Observed	3	0	2	5
	Expected	2.28	1.85	0.87	5.00
Endocrine genetics	Observed	0	2	0	2
	Expected	0.91	0.74	0.35	2.00
Nuclear medicine	Observed	4	4	1	9
	Expected	4.11	3.33	1.57	9.00
Pituitary	Observed	0	1	0	1
	Expected	0.46	0.37	0.17	1.00
Thyroid	Observed	3	1	0	4
	Expected	1.83	1.48	0.70	4.00
Adrenal	Observed	0	1	2	3
	Expected	1.37	1.11	0.52	3.00
Bone and calcium metabolism	Observed	2	3	0	5
	Expected	2.28	1.85	0.87	5.00
Diabetes mellitus	Observed	0	1	1	2
	Expected	0.91	0.74	0.35	2.00
Recent advances in endocrinology	Observed	0	1	1	2
	Expected	0.91	0.74	0.35	2.00
Total	Observed	21	17	8	46
	Expected	21.00	17.00	8.00	46.00
χ^2 tests					
	Value	df	p		
χ^2	25.47	20	0.184		
N	46				

endocrine residents regarding endocrine imaging and nuclear medicine tests. However, the inference drawn from the PEER India study hints toward felt need with respect to diagnostic endocrine training. Of the total, 22 (47.82%) of endocrine residents opted for virtual training in diagnostic modalities (imaging, laboratory, and nuclear tests combined). Endocrinology training curriculum across various institutes in India also have limited exposure to endocrine imaging and nuclear medicine. Classes on diabetes mellitus, endocrine genetics, and recent advances were preferred by 2.0 (4.3%). Virtual classes on pituitary were opted by 1.0 (2.2%). These choices are most likely explained by adequate coverage of these topics in routine day-to-day endocrine practice and significant coverage of recent advances in endocrine journals, various endocrine conferences, and webinars. Of the total, 50% of students wanted virtual faculty lectures, 47.8% opted for virtual clinical case discussions, and 2.2% opted for residents presenting seminars. None of the students opted for virtual platform journal clubs. Of the total, 50% of students wanted anytime access to pre-recorded videos as a method of virtual learning, 29.5% opted for live virtual conference, 18.5% opted for meet the professor format, and 2.3% wanted sir clear my doubts format where students seek solutions to their problems. Of the total, 97.8% of students wanted virtual platform informal assessment of students at various intervals. Various authors have also emphasized the importance of online testing in medical education and its advantages with respect to traditional methods.¹⁴ We also analyzed the association between choice of desired topics according to seniority (year of training) of endocrine students. However, we did not find any significant association (p value 0.184). This shows that seniority of endocrinology training has no effect on desired topics and all residents irrespective of duration spent in endocrinology training have common felts needs with respect to desired topics.

CONCLUSION

Our study has shown that there is a felt need for virtual training among endocrinology students in India. Imaging and nuclear studies are the specific topics that endocrine students want to learn in such teachings, irrespective of seniority as endocrine students. In this study, endocrine residents have preferred faculty lectures in form of pre-recorded videos to be the main method of virtual teaching with online informal assessment at various intervals. This

study can be used while planning virtual endocrine curriculums in the future.

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