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Original Article

Anatomy Section

Faculties Perception on Anatomy Teaching and Assessment in Lockdown and Post-lockdown New Normal Phase

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ABSTRACT

Introduction: For last five-six months in the Corona Virus Disease (COVID-19) lockdown period the Phase 1 MBBS students were being taught Anatomy theory as well as demonstration topics in online mode. Faculties were new to the mode initially, but gradually they coped up for online teaching. Now, in coming near future, institutes will resume with physical class activities and examinations will be held in departments; in the 'new normal period' even when the COVID cases are increasing day-by-day.

Aim: This study was an endeavour to explore faculties' perception in Anatomy teaching and assessment in online teaching and side by side their opinion for planning to resume class and assessment in new normal phase.

Materials and Methods: For this amongst the faculties of Anatomy of West Bengal, posted in 17 different medical teaching institutes; included in the Whatsapp group of Anatomical Society of India West Bengal (WB) Chapter; this cross-sectional study was carried on by an online survey using a pre-tested pre-designed structured questionnaire upon 14 questions regarding their perception of online class-cum-assessments as practiced as well as their perception for future post-unlock class sessions and assessment methods; assuring anonymity; with encouragement and support from Anatomical Society of India WB chapter. Out of total 199 faculties 163 responded in time and their responses was tabulated.

Results: From the response of 163 faculties, it came out that all faculties taught 'abdomen', 'head and neck', 'neuroanatomy' parts as well as some parts of histology and embryology. Google classroom was most favoured teaching platform followed by Zoom meeting application. Majority (84.6%) of the faculties used to take lecture classes by sharing Power Point Presentation (PPT) during class hours; and 46% used to share the pre-recorded demonstration video of the parts. Only 5% of them felt that by this mode full competency could be achieved for the students. Questions sharing followed by answers writing-scan-mail was the most favoured (88.9%) mode of theory assessments; although 57% faculties used Multiple Choice Questions (MCQs) for assessment. In the 'new-normal phase' when the college and classes will resume, faculties like to have demonstration classes with 'mini-group' and lecture topics to be covered solely in online mode. For theory assessment, MCQs was mostly opted (63.8%) supplemented by camera-observed Objective Structured Practical Examination (OSPE) in the practical portion (50.3%).

Conclusion: This study not only provides the experience shared by faculties in conducting the online teaching of Anatomy in the lockdown phases, but also provides insight in planning of the classes and examinations in the post-lockdown COVID-19 times which can be presented as recommendation to the university, which is yet to plan out the examination in 'new normal' era.

Keywords: Coronavirus disease, Objective structured practical examination, Online education

INTRODUCTION

Since the last week of March 2020, the nationwide lockdown started for the prevailing COVID-19 pandemic and the regular physical classes have been put on hold [1]. Students went their home and the medical teaching institutions also got closed except the health care delivery set up. With different Government advisories the 'online teaching' gradually started for the different batches of undergraduate students and this was the sole facility available to carry on the curriculum [2]. More to mention from this year with 2019 entrants Medical Council of India (MCI) commenced the Competency Based Medical Education (CBME) [3] with its assessment plans [4]. As obvious, it became a challenge to all faculties to carry on the curriculum 'solely' in online mode with maintaining the CBME guidelines. Lots of the faculties and even the students were very new to this online teaching especially in Anatomy; so obviously the journey started for the learner as well as the faculty for new era of 'sole' online teaching.

After five months, the government wishes to open the economy in spite of the gradual rise of COVID-19 cases throughout the country. At the phase of unlock 5, the government advisories came to resume the schools and colleges while maintaining the different health care guidelines [5]; as well as Ministry of Health and Family Welfare, Government of India published documents for standard operating protocol to conduct the examinations in this new-normal phase [6]. Side by side our West Bengal University of Health Sciences also notified to hold the scheduled examinations at lock down times, to start very soon [7].

There are 25 undergraduate medical teaching institutions at present in West Bengal, with total annual intake capacity of 3800 in 25 medical teaching institutes; and average intake capacity 152 per year. Since the March 2020, the Anatomy classes for the 2019 entrant batch has been shifted totally in online platform and faculties has taken the classes according to the facilities available to them. Till now, even after the gradual shifting to "unlock phase" the physical classes have not been started anywhere in West Bengal. Almost five months got over after commencing the online teaching in Anatomy, when the faculties have to arrange the demonstration, histology classes side by side the lecture topics. Different institutes have arranged the assessment programmes also in this online mode. At this juncture, when in one hand we need to maintain the safety norms for COVID-19, and in other hands we need to plan out how to resume physical classes as well as examinations in this "new normal" time.

So far, the literature have searched for no research work have been found to explore the faculties' opinion to carry on the class and examination in 'new normal' phase; so this endeavour is to

explore the faculties' perception regarding their practice of online classes-cum-assessments which they have already participated/ conducted in lockdown times and their views for future days to conduct class-cum-assessments when college will resume with physical mode in 'new-normal' days.

MATERIALS AND METHODS

With due permission, encouragement and active participation from the desk of the President, Anatomical Society of India (ASI) West Bengal Chapter; this cross-sectional study was carried out in the month of September 2020; amongst the 199 faculties of Anatomy posted in different medical teaching institutes of West Bengal, who were already included in the official WhatsApp group of the ASI-WB Chapter. Since formation six years ago, this WhatsApp group is considered to be official communication platform amongst faculties of Anatomy in this state under ASI-WB chapter.

A google form based questionnaire has been framed initially with 20 questions themed on: (a) general pattern of the topics covered in the online class; (b) practice and perception of faculties regarding the online classes and assessments; (c) perception for future planning of class and assessments in post-lockdown new normal phase when colleges would resume; and (d) self-assessments scoring by individual faculties using 5 point-likert scale for self-confidence level to conduct online class sessions, what they could gain after the practice in lockdown times, to see whether there would be any change or not.

The primary version of the questionnaire was first applied on departmental colleagues who responded on the understanding of the questions. Later, the set has been sent by e-mail to 20 members of Medical Education Units of different colleges (10 from inside the state and 10 from outside the state) for their opinion, who were not from Anatomy. By using Statistical Package for the Social Sciences (SPSS) Version 20 reliability analysis was done with calculated Cronbach's Alpha value 0.72 and it has been the modified in final shape with 14 questions.

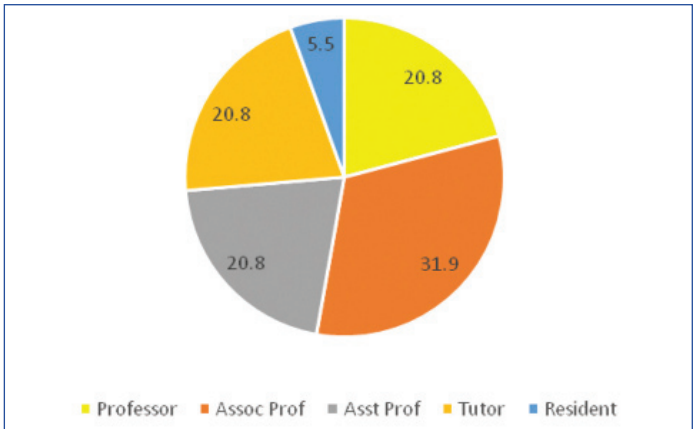
A sensitisation post was given in the ASI-WB Chapter WhatsApp group for the study and after that the link of the google form was shared with request to response by next 72 hours. The form was made with provisions for informed consent and **inclusion criteria** for participation for those, who only conducted online classes-cum-assessments in the lockdown times. Who, neither participated in the online teaching and/nor conducted any online assessment, requested for not to participate. Thus, out of total 199 participants of WhatsApp group, 163 have responded and enlisted finally.

STATISTICAL ANALYSIS

All responses gathered by scheduled time was calculated using the Microsoft excel. Descriptive statistics was used in terms of frequency and percentages.

RESULTS

Amongst the 199 faculties of Anatomy included in the Anatomical Society of India-State chapters, 163 faculties have participated in this survey; in which 52 were Associate Professors, whereas Professors, Assistant Professor and Tutors were in equal population of 34. Only 9 respondents were residents [Table/Fig-1 (Please vide for 13th question)]. During the lockdown phase, almost all respondent teachers participated in teaching of Gross Anatomy of Abdomen, Head and neck, Neuroanatomy, some parts of Histology as well as Embryology; except few who also taught some Gross Anatomy of Thorax [Table/Fig-2] (Q-1). A 73% of faculties confessed that it would not be always possible by them to take attendance in the online classes; though 12.8% faculties always could maintain it [Table/Fig-2] (Q-2).



[Table/Fig-1]: Distribution of respondents according to designation (N=163).

Online Platform

Majority of the faculties used google classroom method (37.4%), whereas 31.2% used zoom meeting app for the online class. 25.7% faculties used google meet and below 10% used others methods as MS teams, jiomeet etc., [Table/Fig-2] (Q-3).

Online Classes

During theory classes majority of the faculties (84.6%) used didactic lecture sharing the PPT. A 7.36% of faculties used to share the PPT beforehand in the students' forum and in the theory class hours, conducted doubt clearance. 4.29% faculties used to share their recorded lecture in YouTube and students were provided with the link. Only 1.6% faculties used to take class in chalk-board live in online platform [Table/Fig-2] (Q-4). On the other hand, sharing of pre-recorded demonstration class was mostly preferred (46%), followed by sharing of internet-available videos of demonstratable parts (30.1%). Only 12.8% faculties practiced live casting of the demonstration class [Table/Fig-2] (Q-5). Faculties' self-assessment scores to judge own confidence level to conduct the online classes says that all of them felt significantly improved confidence to tackle online classes and assessments in anatomy [Table/Fig-3] (Please vide for 14th question).

Constrains Perceived

All of the respondent faculties opined for requirement of strong uninterrupted internet facility in both ends of teacher as well as students for conducting smooth online classes. Disturbed net connectivity mostly perceived as constrain. A 96.3% of faculties perceived the problem for time management in online session, where they could not conduct students' interaction after the class gets over. An 80.3% agreed for the limited capacity of the online classes, for which every-time they needed to make supplemental sessions to cover the entire batch of students [Table/Fig-2] (Q-6). Besides the 5.5% of faculties, rest were not very sure whether such mode of teaching would be able to make competent learner as per the competency guidelines of National Medical Council (erstwhile Medical Council of India) curriculum, or not [Table/Fig-2] (Q-7).

Practice for Assessment

While for the methods of assessments followed, faculties in maximum (88.9%) preferred to conduct the online assessment by sharing the questions to the students and asking them to write answers with to scan-upload and email the answer copy to the provided e-mail ID of faculty; whereas in half a times (57.7%) they conducted the assessment by using MCQ quizzes with shuffled questions and shuffled options along with real time scoring system. In 26.3% times faculties conducted the online viva-voce exam for the students; but in 12.8% they could practice feedback sessions positively [Table/Fig-2] (Q-8,9).

	Type of response	No. of respondent (%)
Distribution of the broad-headings, which were taught in online platform (multiple response) (N=163)		
Q.1. Which parts of Anatomy did you teach in online teaching? (multiple response)	Gross anatomy of abdomen	163 (100)
	Gross anatomy of thorax	72 (44.2)
	Gross anatomy of head-neck	163 (100)
	Histology-part/full	163 (100)
	Embryology-part/full	163 (100)
	Neuroanatomy	163 (100)
Distribution of experiences of faculties regarding maintenance of attendance record of online class (N=163)		
Q.2. Did you always preserve the attendance record of the online class? (single response)	Yes, always	21 (12.8)
	No, never	23 (14.11)
	Sometimes could manage	119 (73)
Distribution of the online teaching platforms which were used by the faculties for online teaching (N=163)		
Q.3. Which online platform did you used for 'online teaching'? (single response)	Zoom meeting app	51 (31.2)
	Google meet	42 (25.7)
	Google classroom	61 (37.4)
	MS team	2 (1.2)
	Jiomeet	6 (3.7)
	Go to meeting	1 (0.6)
	Others (specify)	0
Distribution of responses of faculties regarding their mostly practiced method of online Anatomy lecture class (single response) (N=163)		
Q.4. How you mostly taken the online lecture sessions? (single response, structured question)	Didactic lecture with sharing of PPT	138 (84.6)
	Recorded the lecture beforehand, shared with students; class was for doubt clearance	7 (4.29)
	Shared the PPT with the students; class was for doubt clearance	12 (7.36)
	Just shared the PPT with the students	5 (3.06)
	Class with chalk-board infront of computer	1 (1.6)
Distribution of responses of faculties regarding their mostly practiced method of online Anatomy practical class (single response) (N=163)		
Q.5. How you mostly taken the online practical sessions? (single response, structured question)	You recorded the entire demonstration session and shared with students; later discussed in class hour	75 (46.0)
	You conducted the live demonstration in class hours	21 (12.8)
	You shared the different net-available videos/images for the demonstrable parts	49 (30.1)
	You took help of animation and presented with different virtual Anatomy media/ app	18 (11.04)
Distribution of responses of faculties regarding their perceived constrain(s) for conducting online class (multiple response) (N=163)		
Q.6. What is/are the constrain(s) perceived by you to conduct the online sessions? (multiple response)	Could not see the students as they remain with video-off	141 (86.5)
	It needed to make the PPTs	152 (93.2)
	Time is too short to interact with students at the end of class	157 (96.3)
	It needed strong internet at both the ends	163 (100)
	For limited intake capacity, it needed to arrange multiple sessions to cover the entire batch	131 (80.3)
Distribution of opinion of faculties regarding the probability of achieving competencies by the students, after being taught in online mode. (N=163)		
Q.7. As per your opinion how far the students could achieve competency as desired by MCI? (single response)	1 (not at all)	0
	2	60 (36.8)
	3	68 (41.7)
	4	26 (15.9)
	5 (surely can achieve)	9 (5.5)
Distribution of responses of faculties for their practiced mode of assessment session(s) in online (multiple response) (N=163)		
Q. 8. What was/were your preferred and practiced mode of assessment(s) in online-mode? (multiple response)	Shared the questions with students, let them to write answers followed by scan, upload and e-mail to faculties	145 (88.9)
	MCQ quizzes with shuffled question and shuffled options	94 (57.7)
	Online viva voce	43 (26.3)
	Asked students to submit e-portfolio	9 (5.5)
	Used pre-designed educational template	26 (15.9)
	Used game based educational tools	9 (5.5)
Distribution of responses of faculties for their practice of feedback after assessment programmes (N=163)		
Q. 9. Have you practiced feedback in online assessment? (single response)	Yes, always	21 (12.8)
	No, never	32 (19.6)
	Sometimes	110 (67.5)

Distribution of responses of faculties for their preferred mode to carry on the classes after the college resumes with students in 'new normal unlock' era. (N=163)		
Q. 10. In the "new normal unlock" phase, how you like to carry on the classes, after college resumes? (single response)	**Plan-A** Lecture- online + Histology- online with 'mini-group' gallery walk of slides + Demonstration- online with 'mini group' gallery walk of cadaver/viscera	78 (47.8)
	Plan B Lecture- online + Histology- online with 'mini-group' gallery walk of slides + Demonstration- physical class in 'mini group'	19 (11.6)
	Plan C Lecture- online + Histology- physical class in 'mini-group' + Demonstration- physical class in 'mini group'	18 (11.04)
	Plan D Lecture- Physical class at LT + Histology- physical class in 'mini-group' + Demonstration- physical class in 'mini group'	38 (23.3)
	Plan E Traditional class, as was in pre-COVID times	10 (6.1)
Distribution of responses of faculties for their preferred mode to carry on the theory assessment after the college resumes with students in 'new normal unlock' era. (N=163)		
Q. 11. In the "new normal unlock" phase, how you like to carry on the theory assessments? (single response)	Physical exam; traditional method	21 (12.9)
	Online provision of questions, students will write-scan-upload in portal	38 (23.3)
	Online, 3h MCQ with shuffled options and shuffled questions	104 (63.8)
Distribution of responses of faculties for their preferred mode to carry on the practical assessment after the college resumes with students in 'new normal unlock' era. (N=163)		
Q. 12. In the "new normal unlock" phase, how you like to carry on the practical assessments? (single response)	Physical; Traditional way	4 (2.4)
	Histology- online Radiology- online Viva- online Cadaver table- Physical; daily 'mini group' with barrier screen in between examinee and examiner	18 (11.04)
	Histology- online Radiology- online Viva and Cadaver table- Physical; daily 'mini group' with barrier screen in between examinee and examiner in each table	24 (14.7)
	Objective structured practical assessment with checklists, observed through CCTV with no viva	82 (50.3)
	Objective structured practical assessment with checklists, observed through CCTV with separate viva table carrying barrier screen	35 (21.5)

[Table/Fig-2]: Distribution of responses of the faculties of Anatomy; (question wise).
LT: Lecture theatre

Paired samples statistics t-test					
		Mean	N	Std. deviation	Std. error mean
Pair 1	Self-assessment score of confidence level to conduct online teaching after six months (unlock phase V)	3.73	163	1.653	0.4107
	Self-assessment score of confidence level to conduct online teaching at beginning of lockdown	1.65	163	0.582	0.3617
Paired samples correlations					
		N	Correlation	Sig. (p-value)	
Pair 1	Self-assessment score of confidence level to conduct online teaching after six months (unlock phase V) and before lockdown	163	0.819	0.001	

[Table/Fig-3]: Change in the 'self-assessed score' for confidence level of the faculties to conduct the online teaching-cum-assessment sessions in Anatomy at the beginning of lockdown and now, at the unlock phase (N=163).
(response of 13th and 14th question); p-value=0.001 is considered as statistically significant

When the College will Resume

When the students will rejoin their institutes at the near future unlock phases and college will resume; only 6.1% faculties liked to resume the classes in traditional ways as were in pre-COVID times. Majority (47.8%) faculties opined to maintain the practice of online sessions for lecture, histology as well as demonstration topics followed-up by gallery-walk of histology slides and demonstratable parts/viscera in 'mini' groups. Almost equal proportion of faculties were in favour of physical class sessions for demonstration and histology followed-up with mini-group gallery walk along with the online lecture classes [Table/Fig-2] (Q.10).

Regarding the planning of theory assessment in future days at new-normal period, maximum faculties (63.8%) expressed their support for online 3 hours MCQ with shuffled options and questions. Only 12.9% liked to conduct the theory examination in traditional physical exam-hall system. For practical assessment in Anatomy, 50.3% polled for Objective Structured Physical Examination (OSPE) with checklist observation by CCTV monitoring. A 21.5% of faculties wished to maintain the provision of physical viva-voce exam along-with OSPE, with an installed barrier screen in between assessee and assessor. A 14.7% of faculty opined for online assessment for histology and radiology tables with physical assessment for cadaver table and viva tables with barrier screen. An 11.04% of faculties liked only the cadaver table to be in physical mode with all other portions in online platform. Only 2.4% wished to conduct the practical examination in traditional way as used to be in pre-COVID times [Table/Fig-2] (Q-11,12).

DISCUSSION

As on this date there are more than 9 lac active cases in country out of total confirmed for 65 lacs till date and in West Bengal more than 27 thousand active cases out of till date diagnosed more than 2 lac [8,9] and as the trend is going on increasing, the pandemic is expected to prevail over the coming months. During the lockdown phases, when the students were in their home, faculties continued to teach them Anatomy over the online platform and even they conducted different assessments. Major parts of Anatomy syllabus covering huge numbers of competencies from Abdomen, Head neck, Neuroanatomy etc., got covered in online mode. For these, the major constrains as were perceived is the unstable internet facility. Broadband connections although available in different

institutes but, it could be assured in students' end in each of their residence. Faculties needed to conduct multiple sessions for limited intake allowances by the meeting apps. This could be minimised by institutes' endeavour for opting in paid versions of the online platforms. Faculties favoured the 'mini-group' gallery walk for the demonstration classes in coming days. Traditionally, the 'Small Group' demonstration batches (SGT) are carried on with 60 to 70 students in each institute; which seemed to be a quasi-lecture class!! Even in demonstration times it is also not possible to carry on the sub-batches not less than 30-40 students per each batch. Definitely, if such huge mass of students gather in the so-called SGT classes as well as 30 students comes at a time in demonstration batches; even average 200 students comes in lecture classes, then the social distancing could never be feasible. So the opinion of 'online lecture' not only decreases the gathering of entire batch of students at a time; but also spares that 'lecture hour' to get utilised for demonstration purpose, if demonstration batch get managed with not more than 10 students at a time.

The Government of India in the advisory of conduct of examinations in this post-lockdown new normal COVID-19 times has suggested for maintenance of atleast six feet distances between each candidates and different rules to maintain the crowd management. However, the problem in institutes is the crunch of space for such crowd maintenance. So, the option for online theory examination by online-MCQ appeared to be rational, if the questions get framed in problem-centered approach targeting the higher levels of cognitive domain. The research work of Singh T described that the 4 hours MCQ session get equally reliable than other practical modes of assessments as MiniCEX etc., [10]. For practical parts of examination, the OSPE with Closed Circuit Television (CCTV) observation is also possible to implement and this will definitely decrease teacher-student disease communication. Face-to-face interaction also could be barrier by putting transparent screen as faculties suggested for the viva voce tables. So, overall these faculties statements and opinions could be presented to university authorities for future implication in the coming days when we would to learn to live with COVID.

Limitation(s)

This study was carried on by online survey gathering opinion by Google questionnaire. For the time constrain, we could not approach individual colleges, and carry on focused group discussion and in-depth interview followed by qualitative analysis; which can be carried on in later days.

CONCLUSION(S)

This study not only provides the experience shared by faculties in conducting the online teaching of Anatomy in the lockdown phases, but also provides insight in planning of the classes and examinations in the post-lockdown COVID-19 times which can be presented as recommendation to the university, which is yet to plan out the examination in 'new normal' era.

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