

## Online anatomy lecture using zoom application and its learning experience of undergraduate medical students

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**Received:** 03<sup>rd</sup> September 2020; **Accepted:** 26<sup>th</sup> November 2020; **Published:** 01<sup>st</sup> April 2021

**Abstract:** *Background:* During the COVID19 pandemic as per different government advisories when the physical classes in medical educational institutes got closed, teaching was carried on in online platform. In a Kolkata based medical colleges with 250 annual admission strength, faculties used the 'zoom' as online lecture platform in teaching Anatomy. This study was aimed to explore the students' learning experience and their feedback on such online Anatomy classes. *Method:* After four weeks of such online lecture classes with four classes per week; students' opinion was obtained by google-form based pretested semi structured questionnaire. *Result:* Out of total 174 students returned with the fully filled up data. 68% students replied that they were first time exposed to the online teaching process. Students opined that except the dissection class, almost all other varieties of sessions could be made feasible in online mode. Majority of them (89.19%) they liked the histology sessions as tough in zoom sessions. They perceived the online class more advantageous for clear shared-screen, more eye-to-eye contact and possible recordings of the classes; although the gross disadvantage was mentioned by them is the internet connectivity, time constrains, multiple slots to cover entire batch of students etc. Students polled for early morning classes instead of late hours. Almost half of the students felt interested to continue such online classes even after the normalcy resumes. *Conclusion:* The online teaching platform was new to the teachers and majority of them were not well accustomed to handle the sessions. So this students' feedback helped us to rectify the sessions organised thereafter.

**Keywords:** COVID19 Pandemic, MBBS Education, Online Teaching, Students' Feedback.

### Introduction

"Online learning" is gradually emerging as one of the major roadways in education. It has already made roadways into the other fields of education. Still previously the major concentration of online and distance learning in medicine was seen with gathering additional knowledge, majorly after post-graduation. Online methods like sharing of video links, android applications like flip-learn methods etc. have been used for supplementing the regular classroom assignments and assessments.

Amidst this lockdown time, due to the COVID19 pandemic, when the institutions are closed and the students/ teachers remain confined in their home at different distant cities and places; to

continue the teaching, in almost all where online platforms started to be used in. In the existing various methods of online teaching platforms like google meet, microsoft teams, google classroom etc., considering the cost-effectiveness and feasibility to operate and easy interface, the faculties of the department unanimously decided to use the 'Zoom' meeting application as the online platform for delivering lecture on Anatomy for first professional students.

As both the teachers and students were not well accustomed in any online teaching activities, so only lecture sessions were decided to be taken in the online platform instead of any other group activities. This

study was planned to seek feedback from the students for the online classes.

*Objective:* To assess the students' feedback for the zoom app-based Anatomy theory sessions conducted during the lockdown times.

### Material and Methods

After the announcement of lockdown, the department decided to take the lecture topics of Anatomy in online sessions. Individual topics were divided into specific learning objectives; and the classes started from April 2020. Necessary study materials according to the different classes were organised.

Considering the feasibility and easy student-teacher interface, out of different available online platforms, all faculties of the department unanimously opined to use Zoom video conferencing application to take the classes. As it was the free version of Zoom, here only 100 participants are allowed; so multiple sessions for each class were needed to organise to cover one topic. One broad topic was fragmented in parts to cover in one class.

Password protected zoom meetings were used to preschedule and the time frames were used to get as shared with the students. Once the meeting commenced, usually the classrooms were made locked for security purposes. Study material was not shared before the ZOOM classes. The classes were taken in pattern of mini-lecture, where directly power points were shared in share-screen option. During the 40 minutes session, in first 30

minutes students were taught in pattern of didactic lecture; and in next 10 minutes students were given opportunity to ask queries.

After one month got over, in the mid of May 2020; this survey was carried out as survey among the students of first professional MBBS course in Calcutta National Medical College, Kolkata, with requisite permission from the Head of the Department and Institutional Review/Ethics Board to get the students' perception about the method getting followed, to improvise ourselves. A pretested, structured questionnaire in Google-form, with clause of informed consent, was submitted in the students' WhatsApp group and was asked to fill up by 24 hours. After the 24 hours of, in total 174 completed responses were obtained, enlisted and entered in simple excel sheet which were analysed thereafter.

### Results

Among the respondents although only the 22% students had any earlier exposure to online teaching previously; but a majority (75%) felt that it could be made possible and 71% expressed their readiness to join the online classes [Table-1]. Majority of the students learned to operate the zoom following the instructions of departmental faculties and 78% students had their first contact with zoom as the online meeting platform, after departmental classes [Table-2, Figure-1].

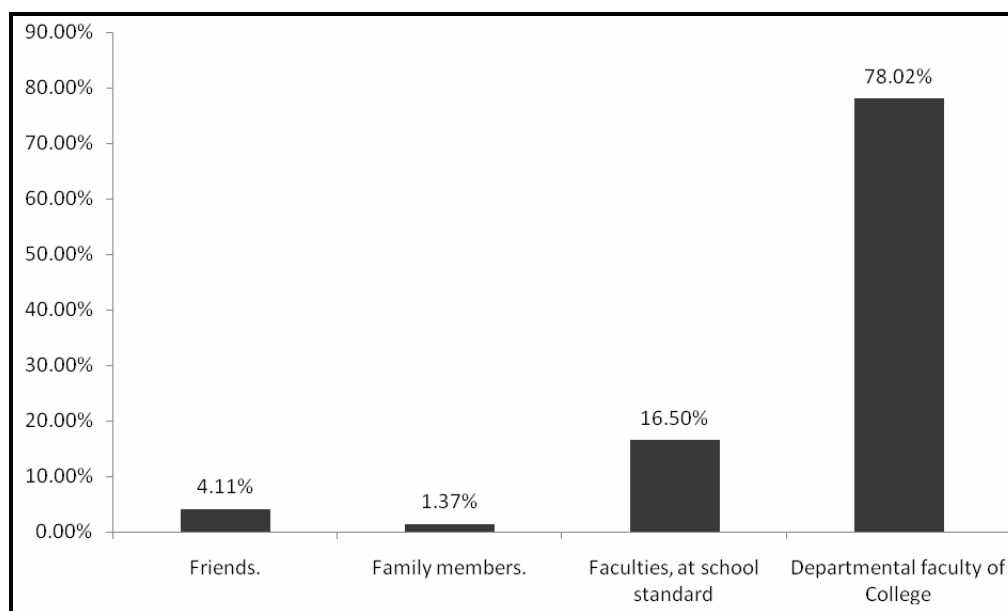
	Issues	Yes	No	skipped reply
1	Have you been exposed to any online teaching previously?	38 (21.92)	117 (67.12)	19 (10.96)
2	Do you think the online teaching is feasible?	129 (74.32)	7 (3.6)	38 (22.08)
3	In future do you prefer to join other online class?	125 (71.62)	9 (5.41)	40 (22.97)

Figures in the parenthesis represent percentage

Implication: majority of the students (67.12%) was not been exposed to online teaching programme previously. After the present teaching programme, almost three fourth (74.32%)

students well perceive that online teaching is very much feasible and 71.62% students expressed eagerness to participate in online teaching if get conducted in future.

**Fig-1:** Distribution of students depending upon their responses on “source of induction for first contact with zoom meeting”. [N=174]



Majority of the students were not aware of the zoom meeting before this. 78.02% students had their first contact with zoom meeting after

directive with the faculties of the institute. In their school level only 16.05% students were exposed with zoom meeting.

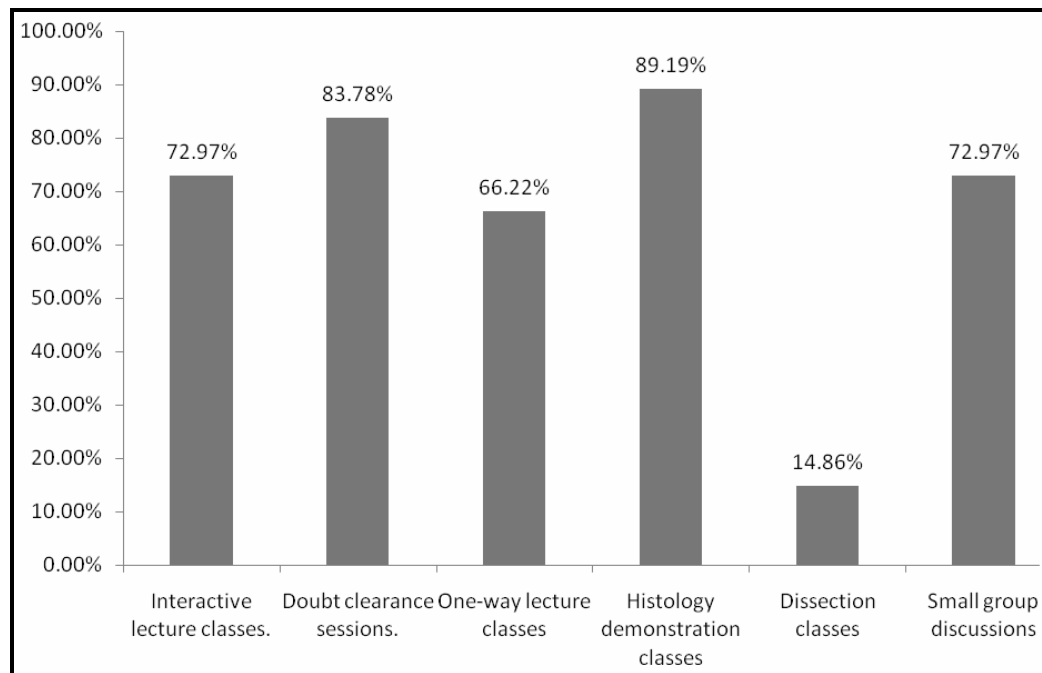
**Table-2: Distribution of students depending upon their response of source of information about zoom meeting (multiple response) [N=174]**

Answer Choices	Responses	
	Percentage	Absolute value
Internet browsing	16.22%	28
Pop ups	1.35%	3
Information from friends	25.68%	45
Information from family members	8.11%	14
Information from faculty (personal level)	77.03%	134
Information from faculty (departmental level)	55.41%	97
Information from institute (institute website, institute notice board, institute correspondence)	24.32%	42

Students gathered the information for the online teaching maximum from the faculties in personal level (77.03%). Departmental notification made them aware in 55.41% cases. Next they mentioned the source of its possibility from institutional web-pages/notice board (24.32%) and from their friends (25.68%). They mentioned that the internet itself made them aware in only 16.22% cases.

The students felt that, all types of classes except dissection classes and demonstration classes involving wet specimen are possible over the online platform, with 73% agreeing on interactive lecture classes, 84% on doubt clearing classes, 66% on one way didactic lectures, 73% on small group discussions and a staggering 89% for histology classes [Figure-2].

**Fig-2:** Distribution of students' depending upon their preferences for types of Anatomy classes (teacher-students interaction) for which zoom-meeting platform can be used up. (Multiple responses) [N=174]



Students opted for multiple types of sessions which can be carried on in zoom meeting. 89.19% participants preferred for Histology class to be taken in zoom; whereas 83.78% preference opted for doubt clearance sessions more above the lectures. Students did not prefer the dissection classes to be taken over zoom.

Students felt the advantages of ZOOM classes over the physical classroom for easy understanding due to use screen sharing with audio input due to no obstruction or disturbances as felt in regular classrooms (85.14%) followed by ability to record the classes for future reference helps them (82%). They preferred the platform for asking questions without feeling judged using the private chat head. The major advantage they felt of the classes being taken through ZOOM was the ability to attend the class from home.

The reasons cited were, not have to miss class due to physical ailment, not being able to travel due to some natural causes like torrential rain, or manmade like a political strike. An isolated

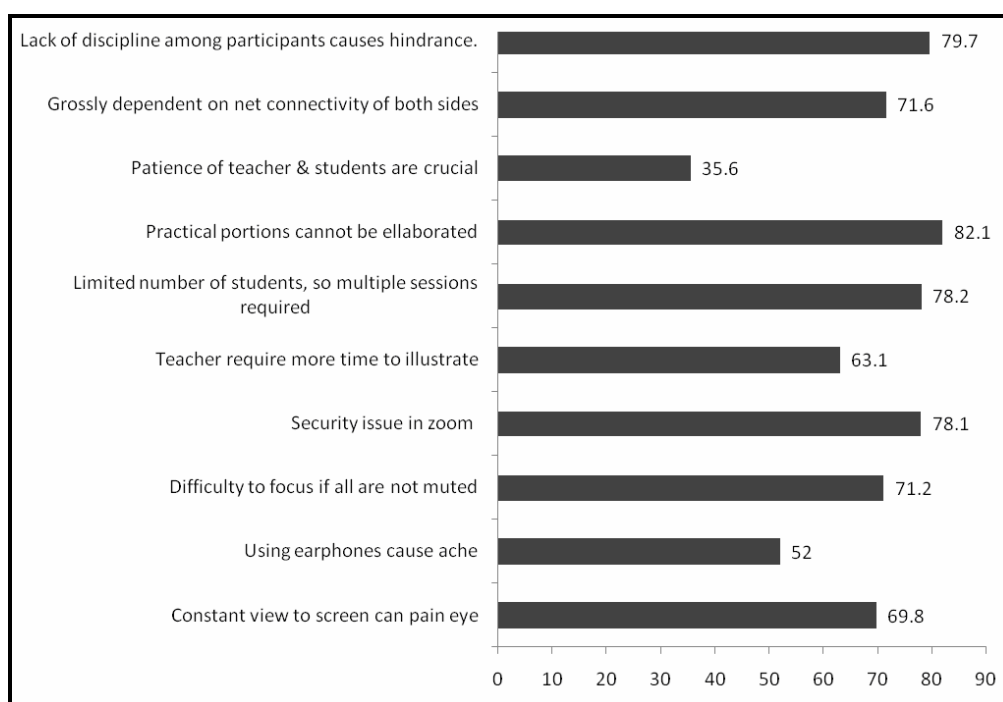
environment in the comfort of their home with a clearer view of the facilitators' screen helped them to concentrate more. The shared links of the related videos helped them for better understanding of the subject. Above 90% concluded that it was a wise utilization of time, as it curtails the time taken for travelling to the institutes [Table-3].

Students pointed out the drawbacks of such online classes as those practical parts could not be covered in ZOOM (82.1%). Breach of discipline (like scribbling marks by participants etc.) among the participants (79.7%), disturbed net connection (71.6%) were been pointed out to spoil the class.

Continuous looking towards a screen (70%) & long use of earphone (52%) were also been perceived potential physical threats. Multiple slots were required to arrange if basic version of the ZOOM gets used as it holds only 100 students at a time (78.2%).For clarifying topics, repetition of concepts more than once, consumes more time (82.43%) [Figure-3].

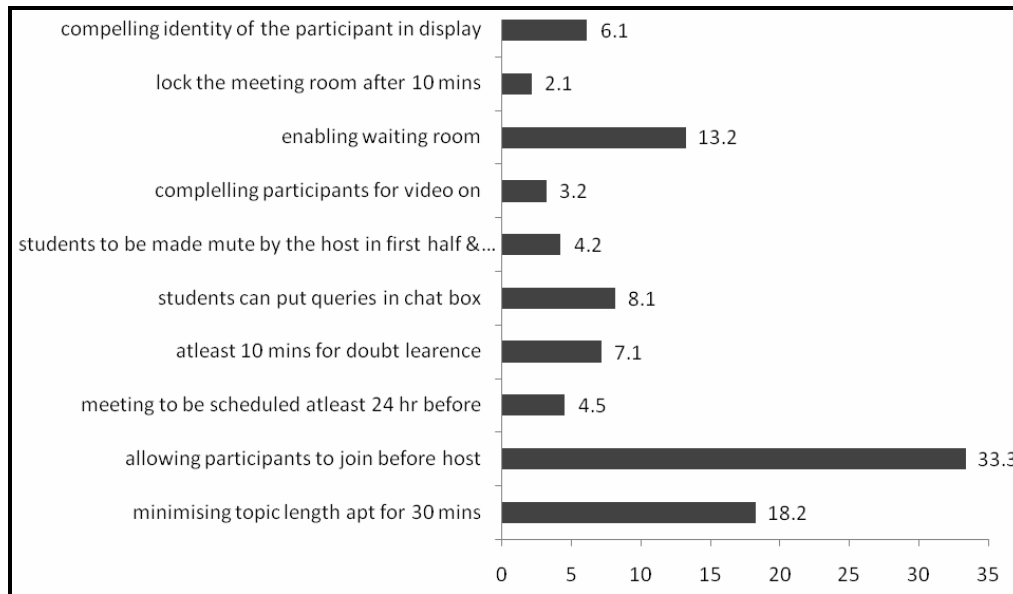
<b>Table-3: Distribution of responses from the students regarding “advantages” of Zoom classroom as perceived by them over and above the Physical classroom (multiple response) [N=174]</b>		
<b>Responses from students</b>		<b>Percentage</b>
Academic edge	Feeling of eye-to-eye contact with teacher & student	61.3
	Clearing doubts is easier	75.2
	Recording a class helps in future revision of the topics	82
	Screen sharing with flowcharts and images help in better understanding of topics.	85.1
	Easier to ask question as we do not feel judged by friends	66.3
	Clearer view of the screen.	61.6
	Direct access to YouTube videos or other videos aid in better understanding.	45.2
Logistics edge	Accessible from home.	95.9
	Classes can be attended even from remote locations	68.4
	Classes can be easily taken when there is some other type of strike going on/ due to any natural calamity	95.9
	Accessible even when health is not well.	94.5
Time frame edge	A wise utilization of time as travelling to & from institute is not required.	90.5
	Can be arranged at any-time of the day, according to the convenience of the teacher & students	91.2
	Multiple classes in a single day is possible.	86.8
	Options for extra classes	78.2

**Fig-3:** Distribution of responses from the students regarding “disadvantages” of Zoom classroom as perceived by them over and above the Physical classroom (multiple response) [N=174]



(Figures represent percentage)

**Fig-4:** Distribution of students depending upon their responses for SINGLE MOST important suggestion that could be adopted to improve the Zoom sessions. [N=174]



(Figures represent percentage)

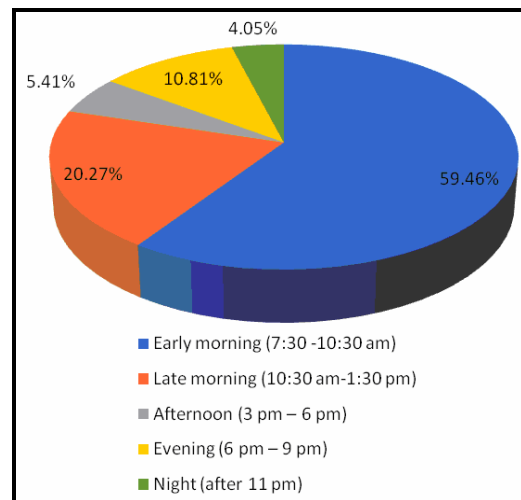
Implication: 33.3% of the students like to get allowed in the meeting room before the host. 18.2% students opined for trimming of the topic appropriate for 30 minutes discussion. Next to it 13.2% students suggest to enable waiting room feature. 8.1% students mentioned that they could provide queries in the chat box. But 2.1% only suggested to lock the meeting room.

Students expressed their eagerness to get allowed to join the meeting before the host (33.3%). More suggestions as to trimming the topic to make apt for 30 mins, to enable waiting room, to put queries in chat box etc. were opined by the students to make the class more effective. Surprisingly, they liked to be present with putting off the video!! [Figure-4].

The preferable time for taking the classes was suggested to be in the early morning from 7 am to 10 am, instead of the late morning or evening hours [Figure-5] As the basic version of ZOOM has no provision to generate the attendee list, so students were asked for their opinion for the ways out to take the attendance in the class. They suggested to take the screenshot of the participants' gallery and to record the attendance according to it; instead of the traditional roll call [Figure-6]. The students were asked whether they intend to continue with the ZOOM sessions, once

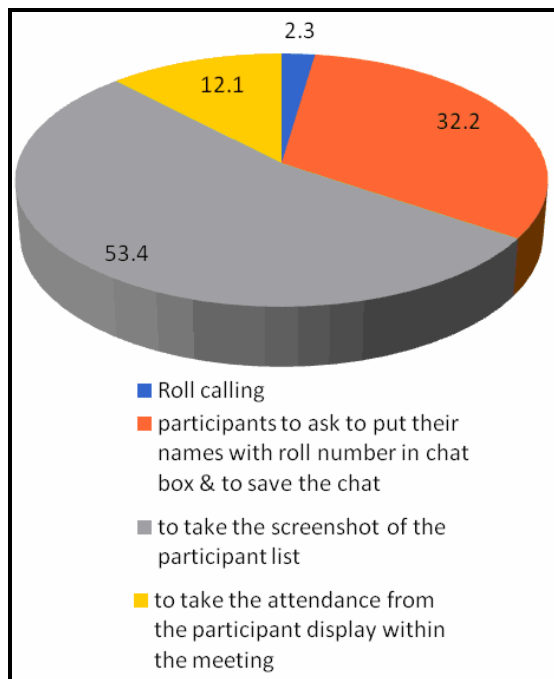
normalcy returns. To this 59.46% gave a positive response [Figure- 7].

**Fig-5:** Distribution of students depending upon their responses for the time to hold the zoom meeting. [N=174]

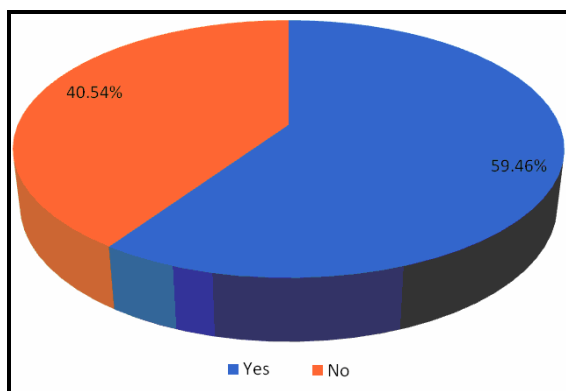


Implication: more than half of the participants (59.46%) polled to hold the meeting before 10 am in morning. 20.27% opined to hold it in between 10.30 am to 1.30 pm. Afternoon session was chosen by only 5.41%; whereas 10.81% students liked to hold the meeting in evening between 6-9 pm. Only 4.05% opined to hold the meeting in late night.

**Fig-6:** Distribution of students depending upon their responses in how to take the attendance in zoom meeting. [N=174]



**Fig-7:** Distribution of students depending upon their responses in preferring for the continuation of the zoom classes even after the regular class will resume in college. [N=174]



Implication: 59.46% students like to continue the zoom classes even after the college resumes; whereas 40.54% students not favours that.

### Discussion

This is an unprecedented situation in present COVID19 era, when all educational institutions are closed by order of the Government for containment of the pandemic [1-2]. To carry on the regular scheduled teaching in such scenario, the department of Anatomy in a medical college in Kolkata, decided to use the ZOOM app, one of

the popular well accepted online meeting platforms, with the first professional MBBS students, to carry on their regular teaching learning activities. Topics of lecture were made decided in departmental meeting and online classes were performed in four classes per week.

As there was very limited access to the institutional facility for subscriptions, so faculties of the department had to practice with the basic (free) versions of zoom with 40 minutes & 100 participant plans. Anatomy topics were taught in lecture style in the zoom sessions organised four sessions a week. After four weeks from the commencement of the online teaching program in Anatomy, feedback from the beneficiaries was felt needed by to improve the following sessions.

This survey was conducted among the participating students to gather their perception, learning experience, opinions for improve, perceptions of advantages as well as disadvantages of ZOOM classes in Anatomy.

Our study revealed majority of the students got first time information to handle zoom session platform from departmental faculties; but they were definitely mentally ready to accept the online teaching programmes. This is quite obvious as before this COVID era, none probably has thought of to use the online classes in the regular medical curriculum.

Students suggested for having sessions in the early morning hours as well as with putting off their videos; which might be with the expectations for better interned bandwidth to participate in the online classroom. Although our students were eager to join the class before the host; but for the security issue, this could not be agreed with. Still majority of suggestions was made incorporated for upliftments of the ZOOM sessions in the following months.

Study among the university students in Canada in 2008, on online teaching in Anatomy and their survey report revealed, that the learning and self-testing tools were accepted widely and students found them relevant and supportive of their self-learning

[3]. In later period, the qualitative research work in purpose to investigate how students perceived their learning experience when combining traditional anatomy lectures with preparatory e-learning activities, authors established the fact that students appreciated the clear structure of the course, and reported that online activities encouraged them towards a first engagement with the material. They felt that they were more active during in-class sessions, described self-study before the end-of-term exam as easier, and believed that contents would remain in their memories for a longer time [4].

The study in Iran in 2016; carried on content analysis of the nine webpages and four projects in Anatomy in view of teaching process and technologies used found that the virtual learning in Anatomy with the assessment plan could be make successful in medical education [5].

On the other hand the study of Singh K et al in recent days found the joyful learning of students in Anatomy upon introduction of new strategies as poems, stories, songs and skitz in relating to teach the musculoskeletal system [6].

The use of smart phones mobile apps was mentioned as one of the important modalities of e-learning practice using specialised apps like apps like dosage calculators, growth charts, Curofy, Docplexus, SCAT; web-based features like PubMed for handheld devices; and social media apps like Facebook, WhatsApp, and YouTube previously in the problem solving approach learning in the undergraduate medical education [7].

In the review works on e-learning in medical education in India, on the evolution, usage, acceptance, variations of applications, advantages of e-learning, it has been described that e-learning now-a-days becomes more acceptable to the students in parallel to the traditional teaching learning methodologies; but it enlightens in minimum, for the scenario, when the traditional physical classroom teaching gets locked down and the fraternity needs to depend solely on e-learning for the medical education [8-9].

Recent study on the students perception on flipped classes organised via zoom app in six days a week; for teaching Anatomy conducted in

one other medical college of Kolkata revealed that students liked to have not more than weekly three sessions and there also they came up with suggestions for improvement of the use of zoom app in teaching Anatomy. In contrary to that study, where faculties used to share the hand-made notes on teaching material well ahead the class schedule and they used the class hours only for doubt clearance; here direct lecture was practiced in the zoom sessions. Important to note that in that study, students confessed for their inability to keep up with the daily class schedule. Similar to present study there also students mentioned the internet speed to be main constrain in participating in the online classes [10].

So, whatsoever, although the online classes were carried on in supplemental to physical classes in different institutions around the globe for a last decades, but probably this is the very first time, where it was the 'only' option to carry on education, especially medical education. So obviously, in the developing countries like us, both teachers and students earlier were not very accustomed with the online classes due to different reasons. After the lockdown got announced, in very short time both the teachers and students could cope up to use online teaching medium even in existing infrastructural limitations. This study reflects the ways out for improvement from the view angle of ultimate beneficiaries.

### **Conclusion**

Both faculties and students were novice to use the online platform. Within a very short time faculties needed to cope up it to carry on the teaching Anatomy theory topics in Zoom sessions. This survey was attempted to gather feedback from the beneficiaries to uplift ourselves.

### **Limitation**

During lockdown times, almost all the institutes have conducted online classes using either of any online platforms; but it was true that there was no standardisations and existing guideline for how to take classes. If a standardised regulation would get implied all



over the state and the study could cover the students of the entire state, then it would definitely carry stronger validity.

### Acknowledgement

The authors sincerely acknowledge the administrative chairpersons of Calcutta National Medical College to allow to conduct the survey. The authors also convey their sincere thanks to the students, who participated in this study.

**Financial Support and sponsorship:** Nil

**Conflicts of interest:** There are no conflicts of interest.

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**Cite this article as:** Saha S, Roy H and Ray K. Online anatomy lecture using zoom application and its learning experience of undergraduate medical students. *Al Ameen J Med Sci* 2021; 14(2):92-100.

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