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Virtual Anatomy Learning in a Medical College in Eastern Part of India during Pandemic

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ABSTRACT

Introduction

The fundamental cornerstone of medical education is Anatomy which specially requires a 3D visualization of human body by traditional mode of teaching. During covid-19 pandemic it was forcefully stopped by introducing newer virtual teaching program. This had offered an opportunity to explore blending of newer methods with traditional one. To find effectiveness of online classes in anatomy during pandemic. And to find out whether online teaching hampers inter-personal relationship.

Methods

Data obtained through questionnaire from 230 first year MBBS students' responses at R.G. Kar Medical College and Hospital were recorded and analysed.

Results

50% of the students were in favour of virtual learning process, 34% were satisfied with online mode as independent mode of learning, 61% responded that online teaching will be helpful for the advancement of their carrier.

Conclusions

The pre-recorded online demonstration classes are better appreciated by the students than hand role playing (which is important in NMC criteria) online classes. Some topics are better taught through online mode than offline method.

Keywords: anatomy; 3D visualization; medical education; virtual teaching program.

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INTRODUCTION

The world had seen changes in everything during the trying time of COVID-19 pandemic. People were going for online consultation (tele-consultation), students went for online teaching, and even kids learned their dancing classes over online process. This pandemic had changed the age-old class-based teaching worldwide. We trained ourselves for online teaching. Different online methods were instituted for medical learning also. Initially it was a hurdle to teach cadaveric dissection, embryology, histology, neuroanatomy, etc. through virtual platforms as part of Anatomy teaching. Among various methods, sharing pre-recorded classes through an online platforms like Google-classroom, zoom, micro-soft team etc. gained much popularity in students. So, this questionnaire-based prospective study was undertaken among first professional MBBS students in a Eastern Indian medical college. We wanted to find out whether this virtual mode of anatomy teaching have been accepted in terms of subject understanding, satisfaction, student-teacher relationship building and also the problems with online teaching.

METHODS

After institutional ethics committee approval feedback of the classes were collected from the first year MBBS students through the questionnaire during the first professional examination time. Personal details of the students were not collected. Out of 250 students, 230 students gave feedback and these were analysed and the results were obtained.

Place of study: R.G.KAR MEDICAL COLLEGE, Kolkata, India

Study Period: The study period was 12 months (March 2020 – February 2021).

Nature of the study: It was a Cross Sectional Study.

Study Sample: The study sample consists of first year MBBS Students of RGKAR Medical College, Kolkata.

Sample size: Sample size consists of 230 Students

Inclusion criteria: Students, who were enrolled at new curriculum (first year) of MBBS, in the year 2019.

Exclusion criteria: Students of old curriculum (first year) of MBBS were excluded from this study.

Study tool: An appropriate tool (questionnaire) was developed and their responses were measured on Likert scale (Score: 1-5). Another questionnaire consists of three, based on affirmative and negative responses.

Statistical analysis: All recorded data were analysed statistically using pie-chart and bar diagrams and to find out p value and accordingly the significance.

Documentation: All results were documented in a tabulated manner.

RESULTS

A. Based on the gender of the students:

There were 148 male and 82 female students among 230 pupil. That is 65.5% and 34.5% respectively [Figure 3].

B. Based on level of satisfaction of students regarding online classes of Anatomy:

Only 50% (13%+37%) students were satisfied with online classes from their home [Figure 4]. 54% (21%+33%) students were not able to see online demonstration of histological slides teaching [Figure 5] and 68% (38%+30%) were not able to see demonstration of viscera through online teaching program clearly without any internet difficulties [Figure 6]. But rest of the students' satisfaction levels were not good in favor of online mode than the offline mode of teaching due to limited access of the technology, internet

connection related issues etc. In our study we also observed that study material provided through online was enough as bypassed by 34% (10%+24%) students (p=<0.001) [Figure 7].

C. According to opinion of students regarding traditional offline Vs new virtual mode of Anatomy classes:

34% (14%+20%) students preferred online teaching as independent mode of learning (p=<0.001) [Figure 8] but rest 53% of the students were not in favor as it hampered group studies [Figure 9] but 26% students stated that classroom teaching provides the right amount of theoretical and practical experience [Figure 10]. At the same time 61% (32%+29%) students responded that they found online teaching helpful for the advancement of their carrier [Figure 11].

All students attended online classes from their own home. Out of 230 students, 144 (65%) preferred online pre-recorded classes than online live classes scheduled(p<0.001) [Figure 12]. For doubt related problems, 178 (77%) students favored traditional offline learning method than the online mode(p<0.001) [Figure 13]. Regarding sharing and receiving knowledge, 164 (76%) students voted for off-line mode [Figure 14] and 157 (71%) students stated that online mode of learning hampered student-teacher relationship(p<0.001) [Figure 15].

DISCUSSION

Due to COVID-19 pandemic Massive Open Online Course (MOOCs) was introduced worldwide it is stated by Swinnerton BJ et al.[1] This course had generated a wide audience due to cost effectiveness and accessibility. Indian medical system also adopted this online teaching program. According to Nemer and Neill,[2] that Indian students are the second highest number of pupils opting for MOOCs. Our institution also followed the online teaching program during the pandemic. Some faculties posted power point presentations, videos of dissection and viscera demonstration but posting them online were difficult because of the size of the videos. All student received those classes through online teaching method. In spite of various issues such as residing in remote areas, internet issues, health related issues etc. students had tried their best to attend the online classes. Based on the responses from the students we observed that 50% of students were used to online, a new mode of teaching, some were not because online teaching methods could not replace class-room traditional teaching method. Even online teaching hampers the students-teacher relationship (by 71% students), inter- personal relationship (47% of the students' response) in our study. Rest of the students' response were satisfactory (53%), but the p value is not significant. Disadvantage

Table 1. Based on level of satisfaction of students regarding online classes of Anatomy.

Questions	No of the Response(n = 230) in percentage				
	Very Satisfied	Satisfied	Neutral	Dis-satisfied	Very dis-satisfied
Q1. Online mode of teaching is acceptable	30(13%)	83(37%)	64(29%)	36(16%)	10(5%)
Q2. Online mode of Histology demonstrations are acceptable	47(21%)	73(33%)	67(31%)	26(12%)	6(3%)
Q3. Online mode of Viscera demonstrations are acceptable	83(38%)	67(30%)	52(23%)	13(6%)	6(3%)
Q.4 Provided study materials are enough during online classes	23(10%)	53(24%)	71(32%)	57(25%)	21(9%)

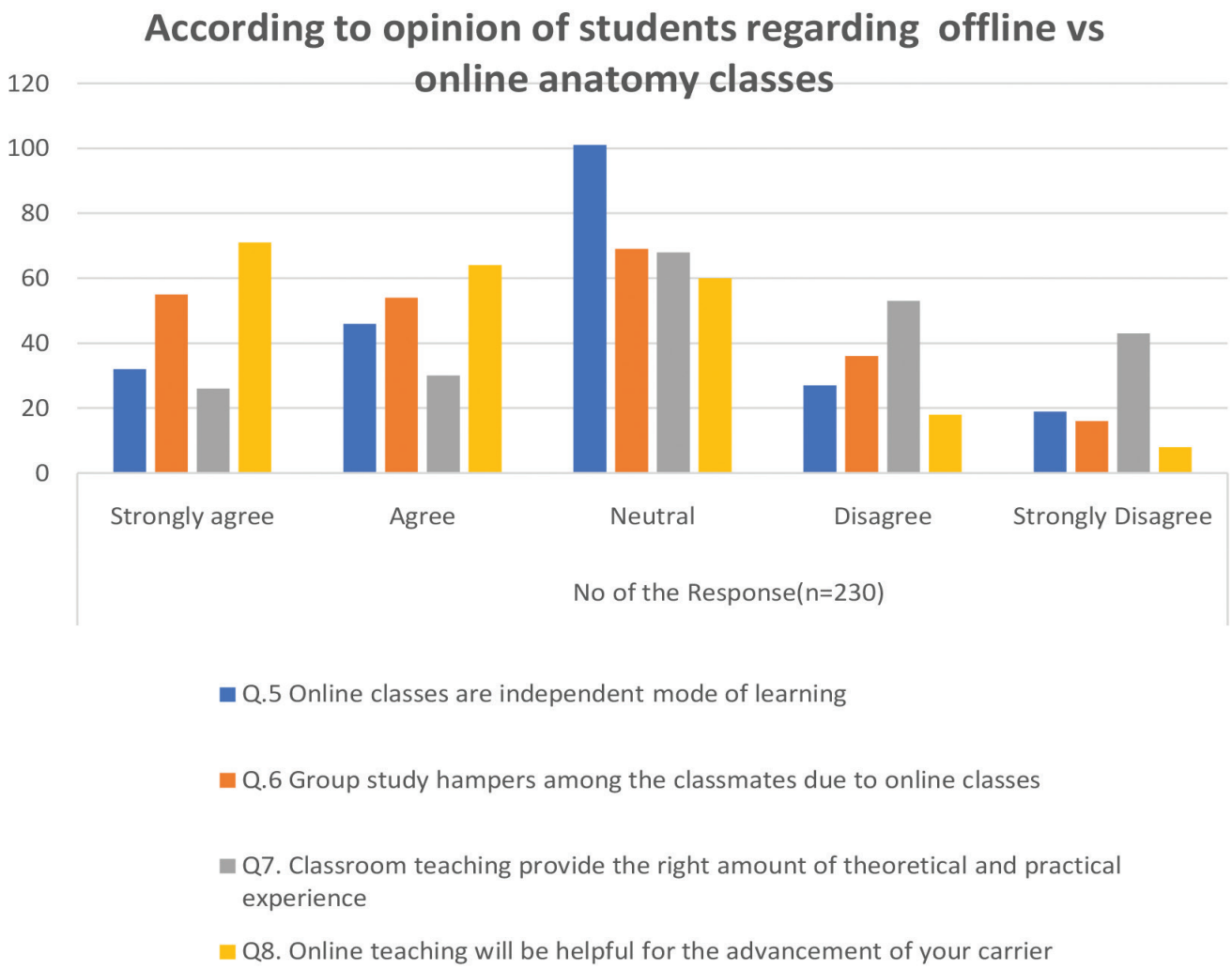

Figure 1. Based on the level of satisfaction of students regarding online classes of Anatomy.

Table 2. According to opinion of students regarding new virtual mode of Anatomy classes V traditional offline classes.

Questions	No of the Response (n = 230) in percentage				
	Strongly agree	Agree	Neutral	Dis-agree	Strongly Dis-agree
Q.5 Online classes are independent mode of learning	32(14%)	46(20%)	101(45%)	27(12%)	19(9%)
Q.6 Group study hampers among the classmates due to online classes	55(24%)	54(23%)	69(30%)	36(16%)	16(7%)
Q7. Classroom teaching provide the right amount of theoretical and practical experience	26(12%)	30(14%)	68(31%)	53(24%)	43(19%)
Q8. Online teaching will be helpful for the advancement of your carrier	71(32%)	64(29%)	60(27%)	18(8%)	8(4%)

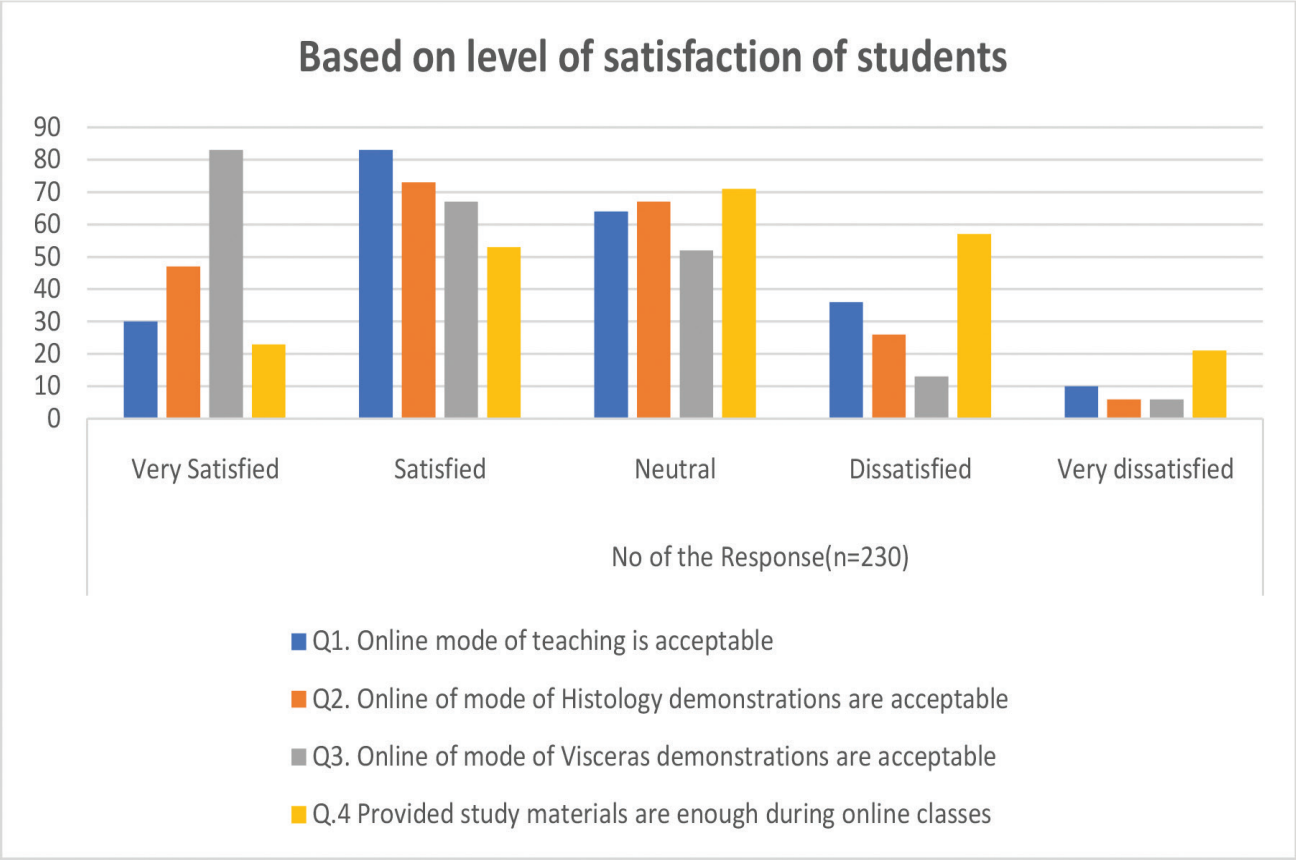

Figure 2. Aaccording to opinion of students regarding online mode vs offline teaching.

of the online method of Anatomy classes are holding viscera in anatomical position, difficulties to distinguish between hollow and solid viscera during demonstration etc. which were represented by 68% in our study. Fifty-five percent (21%+33%) students were not able to see online histology demonstration properly but rest of the students were satisfied because less experience of microscope handling led to various lacunae on that particular histology slide.

Mahajan et al,[3] suggested that through this procedure students and faculties were not only trained into theorical domain but also enhanced their soft skills and research capabilities. They also suggested advantages and disadvantages of MOOCs. Advantages are affordability, wider audience, favorable timings, increased creative skills, sharing ideas and knowledge and disadvantages are documented as reduced return of investment for course developers and issue with course recognition that's lead to reduced employability.

Gaur et al,[4] had suggested that the training of this noble profession needs development of soft skills with the application of the relevant Basic Science Knowledge required for clinical Phase which is applicable in our traditional offline mode of teaching but it was not possible for us to continue during this pandemic. They also suggested that advancement of the technology is more important for implementation of online teaching mode in medical curriculum which we have started during this trying situation. Liang et al.[5] stated regarding exploration of pertinent and creative solutions from their previous experience with SARS outbreak in 2003 and they followed the same during this period of Covid-19 crisis.

John et al,[6] concluded on their study that part of students was satisfied 13.9% with lecture with chalk board, 31.9% with lecture with power point presentation, 54.2% lecture with chalk board followed by power point presentation. Even they observed the preference for offline classes and 59.7% response of online prerecorded classes of Anatomy than online live classes (8.3%), rest of the response with traditional offline classes (70.8%) in their study. Ferrel and Ryan,[7] Sandhu and de Wolf,[8] Edingin et al,[9] described how the COVID-19 pandemic affected the medical education all over the world. Traditional offline teaching replaced by online live or prerecorded classes. During that period from R.G.KAR Medical College, Department of Anatomy also provided online pre-recorded classes and also online live classes through Microsoft-team, zoom etc. In our study 65% students were in favor of online pre-recorded classes, 35% were in favor of online live classes and 66% were satisfied with the study materials provided during online classes. Rajab et al,[10] concluded that 57.9% of faculty, 42% of master's students and 37.4% of medical students had little or no experience of online teaching before the pandemic. Rafi et al,[11] done the questionnaire-based study and they also noted the issues during planning of online classes, requirement of online classes after the commencement of regular classes, need of online practical classes, reusability of online material & role the institution in conducting online classes. In our study percentage of students satisfied with online teaching is significantly higher than the unsatisfied ones ($p<0.001$). We also observed the same regarding the adequacy of study materials provided through online mode compared to offline mode with the significant p value($p<0.001$).

Modern technology of online teaching methods does hampers student-teacher relationship this also one of the finding from here. This study also highlights the online pre-recorded classes are more preferred than online live class and offline is better than online to solve problems and for knowledge sharing without delay.

In medical education group study plays a vital role for improvement of knowledge. During demonstration, practical classes, early clinical exposures, clinical case presentation there is not only team or group study is important but sharing and exchange of ideas also occur. In offline methods of teaching they used to get more information related to the subject, but at the same time 61% (32%+29%) students responded that they found online teaching helpful for the advancement of their carrier. During demonstration, case presentation or any type of practical classes this will implemented as a team work where not only sharing and exchange of ideas will occur but also help in improvement of interpersonal relationship. So, during COVID-19 pandemic when online mode of teaching was started this group study was jeopardized. Fifty-three percentage of students in our study also responded that group study was hampered at that time.

So, in this study we observed that traditional offline mode of teaching cannot be fully replaced by online mode, but medical professionals have to adopt the newer and modern technique for upgrading them and also implementing these in new curriculum along with traditional methods of teaching.

CONCLUSIONS

Anatomy, a field in the biological sciences concerned with identification and description of the body structures of living things. Gross anatomy involves the study of major body structures by dissection and observation. Anatomy also includes micro-anatomy, radiological anatomy, developmental anatomy those topics are difficult to cover through the

online teaching process. During the sudden Covid-19 pandemic lockdown online teaching helped to complete the curriculum of ongoing MBBS batch. Though the help of this modern technology anatomy teaching was much difficult with less advantages, so in general times online classes can be used as an additional to traditional offline class mode mingled with vertical teaching (Interdepartmental teaching) for the purpose to complete the anatomical and clinical correlation to fulfillment of the NMC guideline.

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REFERENCES

1. Swinnerton BJ, Morris NP, Hotchkiss S, PickeringJD. The integration of an anatomy massive open online course (MOOC) into a medical anatomy curriculum. Anat Sci Educ 2017; 10:53-67.
2. Nemer D, O'Neill J. Rethinking MOOCs: the promise for better education in India. Int J Inf Commun Technol Hum Dev 2019; 11:36-50.
3. Mahajan R, Gupta P, Singh T. Massive open online course: Concept and implications. Indian pediatr 2019; 56:489-95.
4. Gaur U, Majumder MAA, Sa B, Sarkar S, William A, Singh K. Challenges and opportunities of preclinical medical education: Covid-19 crisis and beyond. SN compr Clin Med 2020; 22:1-6.
5. Liang ZC, Ooi SBS, WangW. Pandemic and their impact on medical training: Lessons from Singapore. Act Med 2020; 95:1359-61.
6. MerylRachelJohn,DhaneshKumarSharma, Joseph Abraham Poonuraparampil, Vijay Kumar Konuri. A study on the advantages and disadvantages of the online teaching program conducted in the department of Anatomy, AIIMS Raipur- Students' perspective. The society of clinical Anatomists (SOCA), India.2021. Vol 10. Issue 1:10-15.
7. Ferrel MN, Rayan JJ. The impact of COVID-19 on medical education. Cureus 2020;12: e7492.
8. Sandhu P, de Wolf M. The impact of COVID-19 on the undergraduate medical curriculum. Med Educ Online2020; 25:1764740.
9. Edigin E, Eseaton PO, Shaka H, Ojemolon PE, Asemota IR, Akuna E. Impact of COVID-19bpandemic on medical postgraduate training in the United States. Med Educ Online 2020; 25:1774318.
10. Rajab MH, Gazal AM, Alkattan K. Challenges to online medical education during COVID-19 pandemic. Cureus 2020;12e8966.
11. Rafi AM, Varghese PR, Kuttichira P. The peda gogical shift during COVID-19 pandemic: online education barriers and perceptions in central kerala. J Med edu Curric Dev 2020;7;1-4.

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