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ORIGINAL RESEARCH ARTICLE

LEARNING ANATOMY DURING COVID PANDEMIC: A STUDY FROM UNIVERSAL COLLEGE OF MEDICAL SCIENCE

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ABSTRACT

Background: Pandemic plays a pivotal role in reshaping history of mankind. Forced disruption in anatomy education system has compelled us to start all our classes online. Although the COVID-19 pandemic is likely to be the first which current anatomy students are affected by, lessons and experiences can be drawn from the present crises to help us adapt and reform anatomy. The aim of this study was to evaluate medical students' experience about learning anatomy online during covid pandemic.

Methods: This was a descriptive cross-sectional study carried out at universal college of medical science among first and second year MBBS and BDS students from 1st June 2020 to 30th August 2020. A semi-structured, validated, feedback questionnaire was emailed to a total of 255 students, and the filled up response was received from 211 students. The data were collected and descriptive analysis was done using SPSS ver. 22.

Results: Almost 178(84.36%) of students were understanding anatomy class through online lectures, Majority of students 196 (92.89%) of students consider dissection/cadavers or models as an integral part for learning anatomy. similarly, more than three fourth 168(79.62%) of students were in favor of combination of online class with traditional class for better understanding of anatomy discipline.

Conclusions: Online anatomy class was considered effective during crisis but students were suggesting blending of online class with traditional class. Lesson should be learned from current pandemic and explore anatomy education system beyond traditional. We highly recommend development of new anatomy blended curriculum for better understanding of subject.

INTRODUCTION

Pandemics have always destroyed the human population and restrain the process of development.[1] The COVID-19 outbreak is currently responsible for major educational crises globally as most of the world has been faced with a mandated lockdown, and forced closure of educational institutions, including medical colleges.[2] COVID-19 caused a forced disruption in education system where all traditional classes were suspended and replaced by online classes.[3] Most of the basic science subjects adjust to the new normal but for anatomy it was the "hardest nut to crack".

Anatomy word comes from the greek word "ana temnein" which means "to cut up"/Dissection. [4] The pedagogy of anatomy was going through a phase of transformation during crisis .In Nepal all medical colleges have followed traditional way of teaching learning were more focus was given to practical aspect of learning, but anatomy without practical exposure was a new situation both for students and teacher.[5,6] During gross practical basic medical science students not only learn about dissection, blood vessels and muscles moreover form the initial exposure to cadaver, their positioning, dissecting, observing and re wrapping , the most important thing seeded is empathy which will turn into full fledge when they turn out to be a doctor.[7]

Some study have reported about medical education during pandemic but very few have focused on anatomy discipline.[8] The aim of this study was to the find out the view point of students of first and second year MBBS and BDS towards online anatomy classes during COVID-19 pandemic.

METHODS

A descriptive cross-sectional study was conducted among 1st and 2nd year Bachelor of Medicine and Bachelor of Surgery (MBBS) and Bachelor of Dental Surgery (BDS) at universal college of medical science from 1st June 2020 to 30thAugust 2020. Ethical approval was taken from Institutional Review Board of universal college of medical science . The purpose of the study was explained to the students and consent was taken. Those students who were not willing to participate in the study were excluded. A pre testing was conducted out for reliability, validity and refinement by sending questionnaire to 10% of total nursing students who were not participated in this study and Cronbach's alpha was tested which was found to be 0.82.

Questionnaires were emailed to each students and data was collected on the basis of their response. Convenient sampling method was used. A total of 211 questionnaires were completely filled and included in the study.

The minimum sample size was estimated using the following formula:
$n = Z^2 \times p \times q / e^2 = (1.96)^2 \times 0.5 \times (1-0.5) / (0.07)^2 = 196$
Where, Z = 1.96 for confidence interval at 95%
p = 50%
q = 1-p
Margin of error (e) = 7%

All the collected data were entered into Microsoft excel and exported to SPSS version 22 for analysis. Simple frequency tables have been used to analyze data related to the study. Characteristics of the sample were categorized using mean and standard deviation.

RESULTS

Two hundred and eleven students participated in the study in which more than half of students understood online anatomy class. They also suggested combining online class with traditional class in future. Table 1 depicted student's view about understanding of online Anatomy class.

Table 1: Student's view about online anatomy classes (n=211)

General characteristics	Frequency (%)
Understanding Anatomy in online class	
Not understanding	33(15.64%)
Moderately understanding	132(62.56%)
Understanding	46(21.80%)
Effective in Increasing Knowledge	
Yes	142(67.30%)
No	69(32.70%)
Teacher's motivation for online class	
Yes	73(34.60%)
No	64(30.33%)
Can't Say	74(35.07%)

Table 2 depicted students viewpoint on modality of preferred anatomy class were more than three fourth disagree to substitution of online class by regular class whereas lots of students 168(79.6%) were in favor of combination of online class with traditional class.

Table 2: Modality prefer for anatomy class

General characteristics	Frequency (n=211)
Can online class substitute regular class	
Yes	55(26.07%)
No	146(69.19%)
Can't say	10 (4.74%)
Is dissection/cadaver/models integral part of anatomy learning	
Yes	196(92.89%)
No	13(6.16%)
Can't say	2(0.95%)
Could online class be combine with regular class	
Yes	168(79.62%)
No	32(15.17%)
Can't say	11(5.21%)
Problem face during online class	
Internet disturbance	155(73.46%)
Lack of practical class	48(22.75%)
Other's	8(3.79%)

DISCUSSION

COVID-19 created havoc in our day to day activity. Medical education made a huge turn over from traditional to complete digitalization, realizing the situation and safety measures.[9]This change is uncertain and inescapable as social distancing is the only effective measure proved weapon against COVID-19 pandemic.[10]As we all wish for restoration of our regular lifestyle, future is still undecided. No one knows whether this is an accurate depiction of the world future.[11] Learning anatomy has been a person focused and body focused where exposure to cadavers and models was integral part of teaching learning process.[12]As we say necessity needs no law, our necessity has made us realize a new way of learning anatomy through virtual classes, digitalized cadaveric resources etc.

Sigal et al in his study reported that more than half(58%) of students were understanding distance learning as compare to traditional learning, as it provide them learning from their home(comfortable environment) additionally, the videos could be watched again and again clearing all their doubts.[13]In another survey done on Korean medical college were 78.9% of students preferred online lectures over offline lectures 21.1%.[14]This was similar to results of our study where 62.6% students were understanding and 21.8% students were moderately understanding anatomy lectures.

On questioning about the substitution of regular class with regular class 146 students strongly disagree to it. Almost 92% of students consider dissection/cadaver and models as integral part of anatomy learning process. Face to face class including cadaveric dissection can be a sensory explosion, arguably one that cannot be stimulated by technology as stated by Korf et al.[15]Interactive person focused teaching has been shown to lead to a deep understanding of the three-dimensional relationships of the human body and allows students to appreciate anatomical variations and pathologies.[16] The benefits of cadaveric-based teaching have been eluded in a number of studies.[17]Lesson learned in dissection hall allows students to develop competencies of medical profession and gain attributes through the hidden anatomical curriculum, as encountering death, empathy, professionalism, communication and teamwork skills.[18,19]Additionally, students themselves believe that working with cadaveric material helps them learn anatomy and is an important component of becoming a healthcare professional.[17]

In our study almost 155(73.5%) of students commented

on internet disturbance while taking anatomy class which has affected their level of understanding of subject due to interruption in communication. Al-Riyami reported similar dissatisfaction of students due to internet network errors and its hindrance for understanding of subject matter.[20]

Another important thing that we learned is importance of self directed learning. Findlater GS in his study highlighted importance of self directed learning as it improves students' engagement, leading to deeper learning, self dependent and better understanding and knowledge of anatomy.[21] Furthermore, Bergman EM said self directed learning in anatomy will help student to develop critical thinking and increase student's ability to apply anatomical knowledge in future clinical practice.[22] Undoubtedly, the students could have been in lower difficulty in their anatomy learning during COVID-19, if they had been trained to study by themselves.

Moreover next alarming situation we see ahead is lack of cadaver, for academic as well as research purpose. Availability of cadaver has drastically dropped down in recent years no matter its due to our change in curriculum or lack of body donation concept.[23,24] Post covid there is going to be a huge lacuna in cadaveric study of anatomy as there are so many issue regarding safety measures and disposal of body.[25,26]

In our study more than three fourth of students 168(79.62%) have recommended for blended methods of teaching anatomy where online classes will be merged with traditional classes. Green RA et al highlighted importance of blended class as to take advantage of new technology and potentially increase the efficiency and flexibility of delivery of gross anatomy.[27]Similarly, Beale et al and Attardi in their research found no difference in result of students taking online class and face to face class, they even suggested, on basis of their research online classes more effective as it allows them to pause and replay lectures multiple times.[28,29] As we always say every storm has a silver lining, the pandemic has brought possibilities for taking anatomy beyond the walls of the academy, possibilities anatomists at large could well adapt for the flourishing of their discipline.[3] Lessons to be learned during this pandemic are how to use distance learning as we forge ahead, perhaps to next crisis.[30]The disruption of anatomy education during COVID-19 pandemic should be looked as an opportunity to expand anatomy education beyond traditional face to face lectures to remote learning methods, an opportunity to produce new online course.[31,3] The limitation of present study is its viewpoint of students of only one college, so the findings cannot be grossly generalized. The reliability of our data is entirely based upon the correct reporting of the participants. So, call bias might occur. Furthermore, an in-depth qualitative study is necessary.

CONCLUSION

COVID-19 may never disappear completely with reference to this research we would like to recommend blended method of anatomy teaching to be incorporated in our curriculum to gain knowledge of anatomy in this period of crisis as well as develop better grip and core understanding of subject for future.

CONFLICT OF INTEREST: None

FINANCIAL DISCLOSURE: None

REFERENCES:

1. Schwartz JL. The Spanish flu, epidemics, and the turn to biomedical responses. American journal of public health. 2018 Nov;108(11):1455-8. [DOI]
2. Naidoo N, Satyapal KS, Lazarus L. Could COVID-19 Trigger a Rebirth in Anatomy Education? A Glimpse of Anatomists' Responses to Pandemics of the Past and Present. SN Comprehensive Clinical Medicine. 2021 Mar;3(3):784-9. [DOI]
3. Pather N, Blyth P, Chapman JA, Dayal MR, Flack NA, Fogg QA, Green RA, Hulme AK, Johnson IP, Meyer AJ, Morley JW. Forced disruption of anatomy education in Australia and New Zealand: An acute response to the Covid-19 pandemic. Anatomical sciences education. 2020 May;13(3):284-300. [DOI]
4. Calkins CM, Franciosi JP, Kolesari GL. Human anatomical science and illustration: the origin of two inseparable disciplines. Clinical Anatomy. 1999;12(2):120-9. [DOI]
5. Marahatta SB, Sinha NP, Dixit H, Shrestha IB, Pokharel PK. Comparative study of community medicine practice in MBBS curriculum of health institutions of Nepal. Kathmandu University Medical Journal. 2009;7(4):461-9. [PMID]
6. Warner JH, Rizzolo LJ. Anatomical instruction and training for professionalism from the 19th to the 21st centuries. Clinical Anatomy. 2006 Jul;19(5):403-14. [DOI]
7. Lempp HK. Perceptions of dissection by students in one medical school: beyond learning about anatomy. A qualitative study. Medical education. 2005 Mar;39(3):318-25. [DOI]
8. Papapanou M, Routsi E, Tsamakis K, Fotis L, Marinos G, Lidoriki I, Karamanou M, Papaioannou TG, Tsiptsios D, Smyrnis N, Rizos E, Schizas D. Medical education challenges and innovations during COVID-19 pandemic. Postgrad Med J. 2021 Mar 29:postgradmedj-2021-140032. [DOI]
9. Ayittey FK, Ayittey MK, Chiwero NB, Kamasah JS, Dzuvor C. Economic impacts of Wuhan 2019-nCoV on China and the world. Journal of Medical Virology. 2020 May;92(5):473-5. [DOI]
10. Cheng X, Chan LK, Pan SQ, Cai H, Li YQ, Yang X. Gross anatomy education in China during the Covid-19 pandemic: a national survey. Anat Sci Educ. 2021 Jan 1;14(1):8-18. [DOI]
11. Franchi T. The impact of the Covid-19 pandemic on current anatomy education and future careers: A student's perspective. Anatomical Sciences Education. 2020 May;13(3):312-5. [DOI]
12. Jones DG. Anatomy in a Post-Covid-19 World: Tracing a New Trajectory. Anat Sci Educ. 2021 Mar;14(2):148-153. [DOI]
13. Singal A, Bansal A, Chaudhary P, Singh H, Patra A. Anatomy education of medical and dental students during COVID-19 pandemic: a reality check. Surgical and Radiologic Anatomy. 2021 Apr;43(4):515-21. [DOI]
14. Yoo H, Kim D, Lee YM, Rhyu IJ. Adaptations in Anatomy Education during COVID-19. Journal of Korean Medical Science. 1936 Jan;36(1). [DOI]
15. Korf HW, Wicht H, Snipes RL, Timmermans JP, Paulsen F, Rune G, Baumgart-Vogt E. The dissection course–necessary and indispensable for teaching anatomy to medical students. Annals of Anatomy-Anatomischer Anzeiger. 2008 Feb 28;190(1):16-22. [DOI]

16. Smith CF, Mathias HS. Medical students' approaches to learning anatomy: students' experiences and relations to the learning environment. Clinical Anatomy: The Official Journal of the American Association of Clinical Anatomists and the British Association of Clinical Anatomists. 2010 Jan;23(1):106-14. [DOI]

17. Sharma N, Subedi S, Pandit R. Medical Students' Attitude towards Anatomy Dissection: A Study from Nepal. Journal of Universal College of Medical Sciences. 2017;5(2):12-7. [DOI]

18. Kumar A, Ghosh SK, Faiq MA, Deshmukh VR, Kumari C, Pareek V. A brief review of recent discoveries in human anatomy. QJM: An International Journal of Medicine. 2019 Aug 1;112(8):567-73. [DOI]

19. Estai M, Bunt S. Best teaching practices in anatomy education: A critical review. Annals of Anatomy-Anatomischer Anzeiger. 2016 Nov 1;208:151-7. [DOI]

20. Al-Riyami S, Moles DR, Leeson R, Cunningham SJ. Comparison of the instructional efficacy of an internet-based temporomandibular joint (TMJ) tutorial with a traditional seminar. Br Dent J. 2010;209(11):571–6. [DOI]

21. Self directed learning Findlater GS, Kristmundsdottir F, Parson SH, Gillingwater TH. Development of a supported self-directed learning approach for anatomy education. Anatomical sciences education. 2012 Mar;5(2):114-21. [DOI]

22. Bergman EM, Sieben JM, Smailbegovic I, de Bruin AB, Scherpbier AJ, van der Vleuten CP. Constructive, collaborative, contextual, and self-directed learning in surface anatomy education. Anatomical sciences education. 2013 Mar;6(2):114-24. [DOI]

23. Gangata H, Ntaba P, Akol P, Louw G. The reliance on unclaimed cadavers for anatomical teaching by medical schools in Africa. Anatomical sciences education. 2010 Jul;3(4):174-83. [DOI]

24. McMenamin PG, McLachlan J, Wilson A, McBride JM, Pickering J, Evans DJR, et al. Do we really need cadavers anymore to learn anatomy in undergraduate medicine? Med Teach. 2018;40(10): 1020–9. [DOI]

25. Onigbinde OA, Ajagbe AO, Oyeniran OI, Chia T. Post-COVID-19 pandemic: Standard operating procedures for gross anatomy laboratory in the new standard. Morphologie. 2020 Oct 19:S1286-0115(20)30093-X. [DOI]

26. Solarino B, Ferorelli D, Dell'Erba A. Post-mortem routine practice in the era of the COVID-19 pandemic. Journal of Forensic and Legal Medicine. 2020 Aug;74:102010. [DOI]

27. Green RA, Whitburn LY. Impact of introduction of blended learning in gross anatomy on student outcomes. Anat Sci Educ. 2016;9(5):422–430. [DOI]

28. Beale EG, Tarwater PM, Lee VH. A retrospective look at replacing face-to-face embryology instruction with online lectures in a human anatomy course. Anat Sci Educ. 2014;7(3):234–241. [DOI]

29. Attardi SM, Barbeau ML, Rogers KA. Improving online interactions: lessons from an online anatomy course with a laboratory for undergraduate students. Anat Sci Educ. 2018;11(6):592–604. [DOI]

30. Pearson S. Anatomy: beyond the COVID-19 pandemic. Academic Medicine. 2020 Jul 14. [DOI]

31. Longhurst GJ, Stone DM, Dulohery K, Scully D, Campbell T, Smith CF. Strength, weakness, opportunity, threat (SWOT) analysis of the adaptations to anatomical education in the United Kingdom and Republic of Ireland in response to the Covid-19 pandemic. Anatomical sciences education. 2020 May;13(3):301-11. [DOI]