



IJCRR

Section: Healthcare

ISI Impact Factor
(2019-20): 1.628

IC Value (2019): 90.81

SJIF (2020) = 7.893



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Comparing the Effectiveness of Live Online Lectures vs Recorded Video Lectures as Means of Learning in Medical Education During Covid 19 Lockdowns

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ABSTRACT

Introduction: Traditional classroom teaching has been the mainstay of learning in the medical field especially in India. In the present situation of widespread lockdowns due to Covid 19 other means of learning have to be explored in place of traditional classroom teaching. These include live online lectures and recorded video lectures. There is a need to evaluate the effectiveness of these methods whether they meet our requirements of imparting good quality medical education.

Aims: To find the effectiveness of live online lectures and recorded video lectures as means of learning, to study their advantages and disadvantages and compare them.

Methodology: A cross-sectional study was conducted through a digital Google survey on 369 undergraduate students of MBBS, BDS and BPT students of SGT University, Gurugram, Haryana, India. Out of these 274 were female students and 95 were male students. A 5-point Likert scale was used (1- strongly disagree; 2- disagree; 3- undecided; 4- agree; 5- completely agree).

Statistical Analysis: Categorical variables are presented in number and percentage (%). The qualitative variable is compared using the Chi-Square test. A p-value of <0.05 is considered statistically significant. Analysis was done using Statistical Package for Social Sciences (SPSS) version 21.0. The advantages and disadvantages of both the methods of online learning i.e. live online lectures and recorded videos were studied to find the most effective method of imparting distance education.

Results: The majority of students leaned towards recorded videos (53%) as a better method of E-learning as compared to live online lectures (36%).

Conclusion: The main advantage of recorded videos is that the student can view them as many times as required and hence it leads to a better understanding of the topic. The majority of students agreed that traditional classroom teaching should be supplemented by recorded video lectures also.

Key Words: Live online lectures, Efficacy, Recorded video lectures, E-learning, Medical education, Online learning

INTRODUCTION

Medical education comprises of vast and ever-expanding curriculum which needs to be completed within a limited time duration. Traditional classroom teaching has been the mainstay of learning in the medical field especially in India. This has often been supplemented by online methods of learning either by the faculty or students themselves. There has been a dramatic increase in community-based education of health profession students but it faces many challenges in such a large and diverse population of community-based faculty.¹

In the present situation of widespread lockdowns due to Covid 19 other means of learning have to be explored instead of traditional classroom teaching. These include live online lectures and recorded video lectures. Since these online resources are being increasingly used as a means of learning there is a need to evaluate the effectiveness of these methods whether they meet our requirements of imparting good quality medical education.

A study conducted on first-year medical students suggests that digital lectures seem to be an acceptable alternative to face-to-face delivery.²A randomized trial was conducted

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ISSN: 2231-2196 (Print)

ISSN: 0975-5241 (Online)

Received: 06.03.2022

Revised: 12.04.2022

Accepted: 18.05.2022

Published: 05.07.2022

comparing live attending of the lecture series with viewing a CD-ROM-based multimedia version of the same lecture series.³ Medical students in India have been using online resources for understanding and learning various topics in anatomy, physiology and biochemistry.⁴

To meet students' requirements during these times of Covid 19 lockdowns, Department of Anatomy, Faculty of Medicine and Health Sciences, SGT University, Haryana has started uploading video recordings of lectures as well as started live online lectures through Webex. To find the effectiveness of such methods a questionnaire-based Google survey was done on undergraduate students of MBBS, BDS and BPT students of SGT University, Gurugram. Numerous studies are available which compare online teaching with traditional classroom teaching in medical education.^{5,6,7} But this study focuses on the two online teaching methods i.e. comparing live online lectures and recorded video lectures. There is limited literature available on this topic, especially in Indian medical education. This study hopes to overcome this short-coming.

AIMS AND OBJECTIVES

1. To find the effectiveness of live online lectures as a means of learning.
2. To find out the advantages and disadvantages of live online lectures.
3. To find the effectiveness of recorded video lectures as a means of learning.
4. To find out the advantages and disadvantages of recorded video lectures.
5. To compare both the above online methods of learning i.e. live online lectures and recorded videos.
6. To find if there are any significant differences between males and females in the above parameters.

MATERIAL AND METHODS

A cross-sectional study was conducted through a digital Google survey on 369 undergraduate students of MBBS, BDS and BPT students of a private university in Gurugram, Haryana, India. Out of these 274 were female students and 95 were male students.

Ethical clearance was taken from the Institutional Ethical Committee of SGT University for waiver of consent. Participation of students was completely voluntary and students could choose not to respond. Information was kept strictly confidential and no information was taken which could lead to the identity of the participant. SEC/FMHS/F/13/05/20-3

The participants needed to attempt all the questions before submitting. A 5-point Likert scale was used (1- strongly disagree; 2- disagree; 3- undecided; 4- agree; 5- completely

agree).² only the completed questionnaires were assessed and results were calculated. Questionnaires that were not filled were rejected. The students were asked to grade the effectiveness of online live lectures and recorded videos as a method of learning according to the questionnaire appended below.

Type of Study:-Prospective Observational Cross-sectional Study.

A pilot study was conducted on 10 students to calculate the sample size.

Sample Size

$$n \geq \frac{(pc*(1-pc)+pe*(1-pe))*(Z_{\alpha} + Z_{\beta})^2}{(pc-pe)^2}$$

with

pc= Proportion of students agreed with recorded videos

pe= Proportion of students agreed with online live lectures

Where Z_{α} is the value of Z at a two-sided alpha error of 1% and Z_{β} is the value of Z at a power of 99%.

Calculations:

$$n \geq \frac{((.7*(1-.7)+.5*(1-.5))*(2.58+2.33)^2)}{(.7-.5)^2}$$

$$\geq 277.24 = 278 (\text{approx.})$$

Statistical Analysis

Categorical variables are presented in number and percentage (%). The qualitative variable is compared using the Chi-Square test. A p-value of <0.05 is considered statistically significant. The data is entered in an MS Excel spreadsheet and analysis was done using Statistical Package for Social Sciences (SPSS) version 21.0.

RESULTS

The advantages and disadvantages of online live lectures are tabulated in Table 1. 74% of students agreed to better time management with online live lectures. Quite a several students agreed (57%) that the online live lectures provide a better ambience to study. 38% of subjects do not agree that immediate resolving of a query is advantageous.

The advantages and disadvantages of recorded video lectures as a means of learning are tabulated in Table 2.

Students were asked if they were satisfied with online live lectures or video lectures as means of learning and the results are tabulated in Table 3. The comparison was done between the genders also and this is shown in Table 3.

The ratio in which the online live and recorded videos should be taken is tabulated in Table 4 and gender comparisons are also done

The attitude of students towards online live lectures or recorded videos, whether they are satisfied with this means of learning are shown in Table 5. Gender comparison is also done. The question of whether the traditional classroom teaching should be supplemented by either of the methods of E-learning is also seen in Table 5.

Figure 1 shows the comparison of live online lectures and recorded videos between female and male students.

DISCUSSION

The future is to look at what E-learning can do and use it to its strengths. E-learning is good for “in my own time” learning.⁸ It crosses geographical borders and time zones and provides access to unlimited resources for the learner.⁵ Some teaching hospitals in the UK which have reported cases of COVID-19, have suspended medical and observership students from attending clinical attachments.⁹ This could lead to medical students receiving reduced exposure which will be detrimental to their exam performance and competency.⁹

The most important advantage of online live lectures found in this study is they help in better time management. Students are better able to manage their study schedule as the live lecture takes place at a specific time. So the students get a specific target to complete their topics within a limited time duration. This leads to better discipline. Only 30% of students considered live online lecture similar to traditional classroom teaching. 38% students did not agree that immediate resolving of a query was an advantage of live online lectures. Initial technical difficulties (89%) and interruptions during the session due to technical glitches (86%) were the main disadvantages of live online lectures. Quite a large number of students (79%) considered such an increase in screen time a health hazard.

The main advantage of recorded video lectures is that they can be viewed as many times as a student feels the requirement. 85% of students agreed with this. Better time management, better ambience to study and being able to pace the studies at own convenience were other major advantages of learning through recorded videos. The main disadvantage of recorded videos is that the student is not able to raise a query immediately (69%). Other main disadvantages were that the home environment leads to a lack of discipline over some time and increased exposure to screen time is a health hazard especially if the screen is small especially a smartphone.

38% female and 31% male students wanted lectures to be taken by live online method and recorded videos in the ratio of 50:50 as tabulated in Table 4.

Regarding the students’ satisfaction with live online lectures and recorded videos, there was no significant difference between females and males (p -value < 0.05) as shown in Table

5. In our study, 35% of male and female students were satisfied with live online lectures. 61% male and 50% female students were satisfied with recorded video lectures. In a previous study both the gender groups showed no significant difference with respect to preference to use online learning technology.¹⁰

54% of students did not want traditional classroom teaching to be supplemented by live online lectures. There was no significant difference of opinion between male and female students. 68% of students wanted traditional classroom teaching to be supplemented by recorded videos. Again there was no significant gender difference. This view is supported in a previous study that combining digital lectures and classroom meetings for discussion will lead to a better learning experience.²

A study found that students who prefer to use online learning technology tend to find traditional classroom teaching less effective.¹⁰ Thus, the effectiveness of the online learning method depends on the ease of use of these methods by the students.

Here a mention should also be made of the important barriers in the implementation of online learning in medical education which include time constraints, poor technical skills, inadequate infrastructure, absence of institutional strategies and support.¹¹ Solutions to these have to be found before setting up an effective online learning platform. The institutes will have to develop suitable strategies for an effective online program to meet students’ requirements especially in cases of crisis like the present Covid situation.

Research studies show that online learning is quite an effective method. Online learning enhances students’ learning and it is a potential teaching method in medical education.¹²

CONCLUSIONS

The advantages and disadvantages of both the methods of E-learning i.e. live online lectures and recorded videos were studied to find the most effective method of imparting distance education. In the present Covid situation when the students are having online classes, there should be clarity about which method of learning has to be used which will provide maximum benefits. The majority of students agreed that traditional classroom teaching should be supplemented by recorded video lectures also. There was no significant gender difference of opinion. The majority of students leaned towards recorded videos (53%) as a better method of E-learning as compared to live online lectures (36%). The main advantage of recorded videos is the student can view them as many times as required and hence it leads to a better understanding of the topic. Another major advantage is the student can view the recorded video at his or her own

convenient time. But this appears as a two-edged sword as this can also lead to laxity and procrastination on part of the student. E-learning is going to play a very important role in medical education in the coming years in India.¹³ Both the teachers and students need to be prepared for this change. Teachers will have to put in time and resources to adapt to new technology. This cannot be done without the help of the institutions. There are many varieties of tools and learning management systems (LMSs) that can be used for online learning.¹⁴⁻¹⁷ Self-discipline among students and will to put in long hours of self study is essential for success of online learning.

ACKNOWLEDGEMENT

The authors acknowledge the immense help received from the scholars whose articles are cited and included in references of this manuscript. The authors are also grateful to authors/ editors/ publishers of all those articles, journals and books from where the literature for this article has been reviewed and discussed.

Conflict of interest

None

Source of funding

No financial support was taken from any private or government organization.

Author's contribution

Dr Kirandeep Kaur Aulakh: Study design, collection of data, data analysis and interpretation, writing of the manuscript.

Dr Prachi Saffar Aneja: Collection of data, writing of the manuscript.

Dr Susmita Saha: Writing of manuscript.

Dr Savita Bansal: Writing of manuscript.

REFERENCES

- Langlois JP, Thach SB. Bringing Faculty Development to Community-based Preceptors. *Acad Med.* 2003 Feb;78(2):150-55
- Singh A, Min AK. Digital lectures for learning gross anatomy: a study of their efficacy. *Korean J Med Educ.* 2017;29(1):27-32
- Solomon DJ, Ferenchick GS, Laird-Fick HS, Kavanaugh K. A randomized trial comparing digital and live lecture formats. *BMC Med Educ.* 2004 Nov29;4:27.
- Hiwarkar M, Taywade O. Assessment of knowledge, attitude and skills towards e-learning in first-year medical students. *Int J Res Med Sci.* 2019;7:4119-23
- Ghanizadeh A, Mosallaei S, Dorche MS, Sahraian A, Parisa Y. Attitude and Use of E-Learning, education by medical students in Shiraz, Iran. *Int Med Medical Invest J.* 2018;3(3):108-111. DOI: 10.24200/imminv.v3i3.83
- Schimming LM. Measuring medical student preference: a comparison of classroom versus online instruction for teaching Pub-Med. *J Med Libr Assoc.* 2008;96(3):217-222. doi:10.3163/1536-5050.96.3.007
- Tang B, Coret A, Barron H, Qureshi A, Law M. Online lectures in undergraduate medical education: how can we do better?. *Curr Med J.* 2019, March 13;10(1):e137-e139. DOI: 10.36834/cmej.53020.
- Choules AP. The use of e-learning in medical education: a review of the current situation. *Postgrad Med J.* 2007;83(978):212-216. doi:10.1136/pgmj.2006.054189
- Ahmed H, Allaf M, Elghazaly H. COVID-19 and medical education. *Lancet Infect Dis.* 2020; Published online May 23. [https://doi.org/10.1016/S1473-3099\(20\)30226-7](https://doi.org/10.1016/S1473-3099(20)30226-7)
- Wong L, Fong M. Student attitudes to traditional and online methods of delivery. *JITE: Research.*2014;13:1-13. <http://www.jite.org/documents/Vol13/JITEv13ResearchP001-013Wong0515.pdf>
- O'Doherty D, Dromey M, Loughheed J, Last J, McGrath D. Barriers and solutions to online learning in medical education – an integrative review. *BMC Med Educ.* 2018;18(1):130. doi: <https://doi.org/10.1186/s12909-018-1240-0>
- Pei L, Wu H. Does online learning work better than offline learning in undergraduate medical education? A systematic review and meta-analysis. *Med Edu Online.* 2019;24(1):1666538. DOI: 10.1080/10872981.2019.1666538
- Dhir SK, Verma D, Batta M, Mishra D. E-learning in medical education in India. *Indian Pediatr.* 2017 Oct 25;54:871–877. Doi : <https://doi.org/10.1007/s13312-017-1152-9>
- McLaughlin M, Brame D. The best video conferencing software for; 2020. Available from: <https://www.pcmag.com/picks/the-best-video-conferencing-software>.
- Sutterlin J. Learning is social with zoom video conferencing in your classroom. *eLearn Magazine;* 2018. Available from: <https://elearnmag.acm.org/featured.cfm?aid=3236697>.
- Baig M, Gazzaz ZJ, Farouq M. Blended learning: The impact of blackboard formative assessment on the final marks and students' perception of its effectiveness. *Pak J Med Sci.* 2020;36:327-32.
- Saiyad S, Virk A, Mahajan R, Singh T. Online teaching in medical education: Establishing good online teaching practices from cumulative experience. *Int J App Basic Med Res.* 2020; 10:149-155.

Table 1: Distribution of advantages and disadvantages of online live lectures

Advantages of online live lectures	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Better time management	89(24.12%)	185(50.14%)	28(7.59%)	47(12.74%)	20(5.42%)
Better ambience to study	53(14.36%)	157(42.55%)	43(11.65%)	80(21.68%)	36(9.76%)
Immediate discussion on a query can be done with the instructor /facilitator	40(10.84%)	126(34.15%)	61(16.53%)	90(24.39%)	52(14.09%)

Table 1: (Continued)

Advantages of online live lectures	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
It's just like traditional classroom teaching	25(6.78%)	87(23.58%)	72(19.51%)	108(29.27%)	77(20.87%)
No new device is required	119(32.25%)	190(51.49%)	26(7.05%)	20(5.42%)	14(3.79%)
Disadvantages of online live lectures					
Initial technical difficulties	149(40.38%)	179(48.51%)	20(5.42%)	19(5.15%)	2(0.54%)
Interruptions during the session due to technical glitches	157(42.55%)	163(44.17%)	31(8.40%)	16(4.34%)	2(0.54%)
It's just not like traditional classroom teaching	127(34.42%)	143(38.75%)	56(15.18%)	32(8.67%)	11(2.98%)
Increase in screen time is a health hazard especially if a small screen like smartphone is used	155(42.01%)	136(36.86%)	52(14.09%)	24(6.50%)	2(0.54%)

Table 2: Distribution of advantages and disadvantages of recorded video lectures

Advantages of recorded video lectures	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Able to view the recorded videos lecture as often as I want, enables better revision of content	142(38.48%)	172(46.61%)	21(5.69%)	21(5.69%)	13(3.52%)
Better time management	116(31.44%)	180(48.78%)	33(8.94%)	25(6.78%)	15(4.07%)
Better ambience to study	98(26.56%)	162(43.90%)	39(10.57%)	50(13.55%)	20(5.42%)
Gives an opportunity to read a chapter at my own designated time	125(33.88%)	175(47.43%)	30(8.13%)	27(7.32%)	12(3.25%)
As far as I am concerned it's as good as online live lectures	66(17.89%)	140(37.94%)	67(18.16%)	55(14.91%)	41(11.11%)
No new device is required	117(31.71%)	194(52.57%)	26(7.05%)	17(4.61%)	15(4.07%)
Disadvantages of recorded video lectures					
Immediate discussion on a query cannot be done	81(21.95%)	176(47.70%)	59(15.99%)	42(11.38%)	11(2.98%)
Home ambience leads to lack of discipline	76(20.60%)	140(37.94%)	57(15.45%)	63(17.07%)	33(8.94%)
It becomes boring due to lack of social interaction	93(25.20%)	135(36.59%)	61(16.53%)	59(15.99%)	21(5.69%)
Increase in screen time is a health hazard especially if a small screen like smartphone is used	121(32.79%)	162(43.90%)	44(11.92%)	30(8.13%)	12(3.25%)

Table 3:-Comparison of satisfaction with live online lectures/recorded video lectures between gender.

Satisfied with live online lectures/ recorded video lectures	Female (n=274)	Male (n=95)	Total	P value	Test performed
Satisfied with live online lectures					
Strongly agree	17 (6.20%)	6 (6.32%)	23 (6.23%)	0.223	Chi square test,5.692
Agree	79 (28.83%)	27 (28.42%)	106 (28.73%)		
Neutral	119 (43.43%)	31 (32.63%)	150 (40.65%)		
Disagree	38 (13.87%)	19 (20%)	57 (15.45%)		
Strongly disagree	21 (7.66%)	12 (12.63%)	33 (8.94%)		
Satisfied with recorded video lectures					
Strongly agree	45 (16.42%)	20 (21.05%)	65 (17.62%)	0.217	Chi square test,5.769
Agree	91 (33.21%)	38 (40%)	129 (34.96%)		
Neutral	100 (36.50%)	22 (23.16%)	122 (33.06%)		
Disagree	25 (9.12%)	10 (10.53%)	35 (9.49%)		
Strongly disagree	13 (4.74%)	5 (5.26%)	18 (4.88%)		

Table 4: Comparison of what should be the ratio of online live classes : recorded video lectures between gender.

What should be the ratio of online live classes : recorded video lectures	Female (n=274)	Male (n=95)	Total	P value	Test performed
100:0	20 (7.30%)	8 (8.42%)	28 (7.59%)	0.378	Chi square test,4.216
75:25	64 (23.36%)	18 (18.95%)	82 (22.22%)		
50:50	104 (37.96%)	29 (30.53%)	133 (36.04%)		
25:75	59 (21.53%)	28 (29.47%)	87 (23.58%)		
0:100	27 (9.85%)	12 (12.63%)	39 (10.57%)		
Total	274 (100%)	95 (100%)	369 (100%)		

Table 5: Comparison of attitude of students towards online teaching between gender.

Attitude of students towards online teaching	Female (n=274)	Male (n=95)	Total	P value	Test performed
Satisfied with live online lectures					
Satisfied	96 (35.04%)	33 (34.74%)	129 (34.96%)	0.958	Chi square test,0.003
Dissatisfied	178 (64.96%)	62 (65.26%)	240 (65.04%)		
Satisfied with recorded video lectures					
Satisfied	136 (49.64%)	58 (61.05%)	194 (52.57%)	0.055	Chi square test,3.688
Dissatisfied	138 (50.36%)	37 (38.95%)	175 (47.43%)		
Should traditional teaching be supplemented with online live lectures					
No	144 (52.55%)	55 (57.89%)	199 (53.93%)	0.368	Chi square test,0.81
Yes	130 (47.45%)	40 (42.11%)	170 (46.07%)		
Should traditional teaching be supplemented with recorded videos lectures					
No	90 (32.85%)	40 (42.11%)	130 (35.23%)	0.104	Chi square test,2.65
Yes	184 (67.15%)	55 (57.89%)	239 (64.77%)		

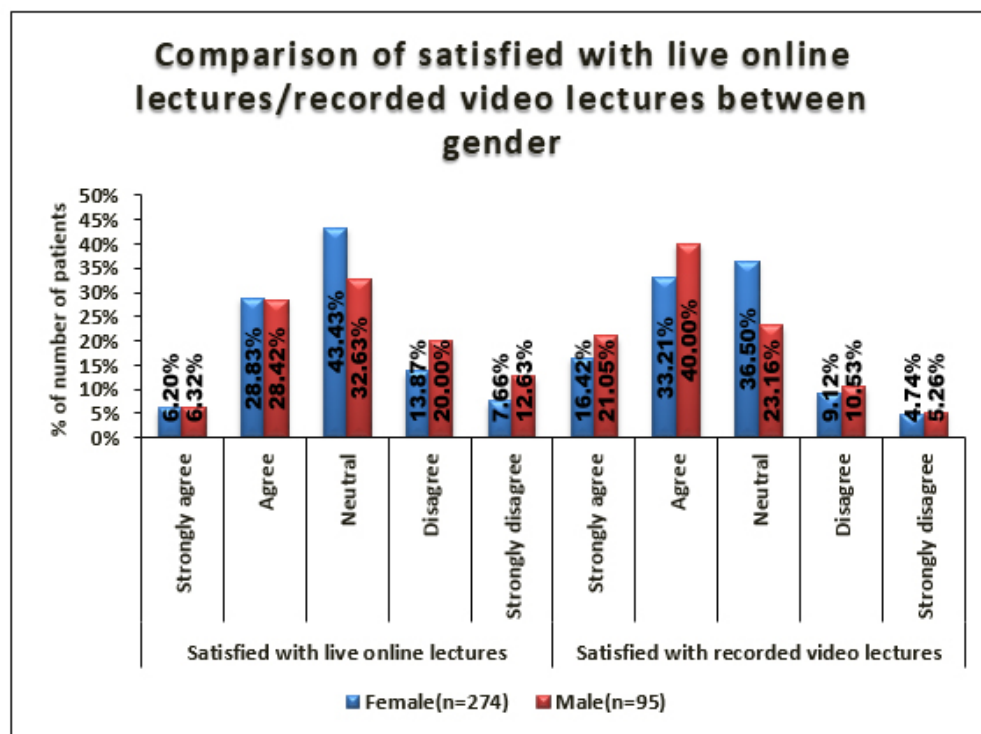


Figure 1: Comparison of attitude of students towards online teaching between gender.