Effect of Lockdown on Teaching-Learning Process: A Students Perspective

Mayavati Nannaware[1], Shraddha Kulkarni[2], Vaishali Bansod[2], Samir Singru[3], Parvinder Chawla[4], Kyati Kalra[5]

ORIGINAL ARTICLE

ABSTRACT

Background: In India, first confirmed case of coronavirus disease 2019 (COVID-19) was reported from Kerala on January 30, 2020, and in March 2020, cases were also reported from Maharashtra, Delhi, Punjab, and Rajasthan, so Government of India has declared nationwide lockdown from March 23, 2020, to May 31, 2020. In view of social distancing, school and colleges were shut down and also many schools and hostels of the colleges and universities were converted into the temporary quarantine centers for COVID-19 by the government. As a result, teaching and learning process was suffered. This study was undertaken to study the effect of lockdown on teaching-learning process among the students. **Materials and Methods**: A cross-sectional study was conducted using Google Forms which was circulated through social media among the students of various colleges in India using snow ball sampling techniques. **Results:** A total of 581 students participated in the study, out of these 301 (52%) were male and 536 (92%) were of the age group 18–25 years. Most common app used by the college is Zoom app for teaching. Most of the students were satisfied with online teaching. Various negative effects as perceived were lack of hands on training, postponement of examinations, and worry about the future. **Conclusion**: Universities and colleges need to develop an online/offline practical teaching tools to make learning effective and to develop an online assessment system for conducting examinations during pandemics to prevent the delay.

KEY WORDS: Coronavirus disease 2019 pandemic, lockdown, teaching-learning.

Introduction

First case of coronavirus disease 2019 (COVID-19) was reported on December 31, 2019, from Wuhan Province of China. The WHO declared novel coronavirus outbreak as a public health emergency of international concern.[1] In India, first confirmed case of COVID-19 was reported from Kerala on January 30, 2020, and in March 2020, cases were also reported from Maharashtra, Delhi, Punjab, and Rajasthan, so Government of India declared nationwide lockdown from March 23, 2020, to May 31, 2020.[2,3] In view of social distancing, school and colleges were shut down and also many of the schools and hostels of the colleges and universities were converted into the temporary quarantine centers for COVID-19 by the government. As a result, many competitive examinations were also cancelled or delayed. To manage this crisis, many educational institutes started online teaching and evaluation of the students. Online teaching is a somewhat new concept in Indian context to both teachers and students.

As per study by Ms. Shenoy *et al.,* tools used by faculty during lockdown for teaching and learning through online modes were Zoom, Google Hangouts, Skype meet up, Google classroom, earning learning management system (LMS), information communication tools, YouTube, etc.[4] However, the problems faced by students and other effects of lockdown were not studied. We, therefore, planned this study to find out the effect of lockdown on

[1]Associate Professor, Department of Community Medicine, Smt. Kashibai Navale Medical College and General Hospital, Pune, Maharashtra, India, [2]Assistant Professor, Department of Community Medicine, Smt. Kashibai Navale Medical College and General Hospital, Pune, Maharashtra, India, [3]Professor, Department of Community Medicine, Smt. Kashibai Navale Medical College and General Hospital, Pune, Maharashtra, India, [4]Professor and HOD, Department of Community Medicine, Smt. Kashibai Navale Medical College and General Hospital, Pune, Maharashtra, India, [5]Statistician Cum Assistant Professor, Department of Community Medicine, Smt. Kashibai Navale Medical College and General Hospital, Pune, Maharashtra, India

Address for correspondence:
Dr. Samir Singru, Department of Community Medicine, Smt. Kashibai Navale Medical College and General Hospital, Pune, Maharashtra, India. Phone: +91-9922051744. E-mail: psmsamir@gmail.com

teaching process and various problems faced by the students while coping with e-learning process.

Materials and Methods

Institutional Ethical approval was obtained (Ref. SKNMC/Ethics/App/2020/656) dated May 30, 2020. A cross-sectional study was conducted among the students seeking higher education all over the India, sampling method used was snow ball sampling, duration is May 2020–August 2020, and data were collected using Google Forms. Pre-designed structured questionnaire was prepared using Google Forms. Content validity of the questionnaire was tested by the four experts from the department and pilot tested among the students to test accuracy of responses and time required for filling the questionnaire. This questionnaire was translated in three languages, English, Marathi, and Hindi. The questionnaire in Marathi and Hindi was back translated into English by the other expert faculties and tested for uniformity with the original English version questionnaire. Suggested changes were done and then following Google link of this questionnaire was circulated through various social media platforms such as Email, Facebook, and WhatsApp group.[5] Confidentiality was maintained as the questionnaire did not ask for name, address, and mobile number of the participants. The first part of questionnaire was consent and the second part had questions related to online teaching-learning process. Data were collected through Google Forms and exported in the Excel sheet. Data analysis was done using Epi Info Version 7.2. 2.6. Chi-square test was applied to test the association between independent and dependent variable and $P < 0.05$ was considered as statistically significant.

Results

A total of 581 students participated in the study from 18 different states all over the India. Details are shown in Figure 1. Out of these, 301 (52%) were male and 280 (48%) were female. Most of them 536 (92%) were of the age group 18–25 years. Most of the students were seeking graduation 80%. Stream wise majority of the students were from medical and allied stream (66.26%) followed by engineering (26 %). Details are shown in Table 1.

When asked regarding the completion of syllabus for current academic year, 405 (70%) of the students said that the syllabus of the current academic year was not completed by the college and Zoom app
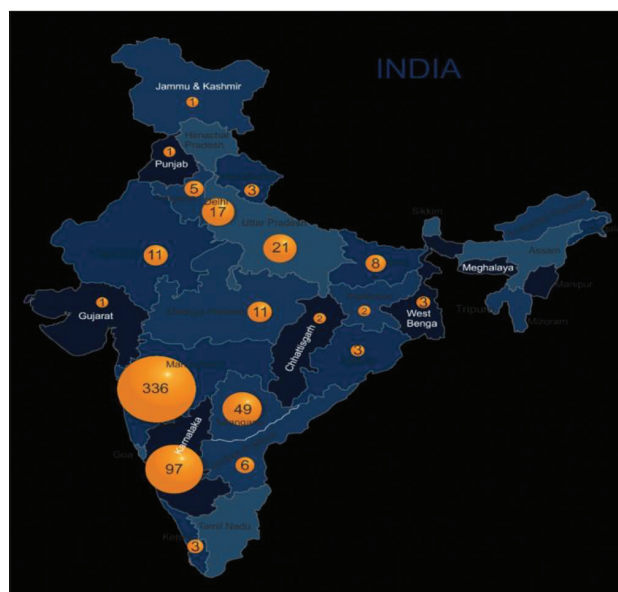

Figure 1: Distribution of the Participants from states all over India

Table 1: Cross-tabulation of demographic profile and gender of the participants

| Age group (years)	Gender	
	Male (%)	Female (%)
18–25	281 (52.43)	255 (47.57)
26–30	04 (20.00)	16 (80.00)
>30	16 (64.00)	09 (36.00)
Stream of education		
Medicine and allied*	160 (41.56)	225 (58.44)
Engineering	124 (82.12)	27 (17.88)
Others**	17 (37.78)	28 (62.22)

(*): Medicine and allied included MBBS, dental, physiotherapy, and nursing students, (**): Others included science, arts, commerce, and law students

was most common tool used for online teaching. However, some colleges used more than 1 tool for teaching (34.42%). Experience of students about online teaching is shown in Figure 2. Advantages and disadvantages of online teaching stated by students are shown in Table 2. Difficulties faced by the students while online teaching-learning is shown in Table 3. Effects of lockdown on teaching-learning are shown in Table 4.

When asked regarding government's decision about conducting examination of various courses, only for final year 46% of students agreed with the government decision.

Table 2: Advantages of online teaching cross-tabulated with demographic factors

Demographic variable	Advantages of online teaching		Result statistics	Interpretation
	No need to travel			
Age group	Not reported (%)	Reported (%)		
18–25	286 (53.36)	250 (46.64)	$\chi^2=6.7076$	Significant
26–30	7 (35.00)	13 (65.00)	df=2	
>30	8 (32.00)	17 (68.00)	$P=0.035$	
Age group	**Saves time**			
	Not reported (%)	Reported (%)		
18–25	405 (75.56)	131 (24.44)	$\chi^2=9.2144$	Significant
26–30	10 (50.00)	10 (50.00)	df=2	
>30	15 (60.00)	10 (40.00)	$P=0.01$	
Gender	**Attended from anywhere**			
	Not reported (%)	Reported (%)		
Male	116 (38.54)	185 (61.46)	$\chi^2=6.4350$	Significant
Female	80 (28.57)	200 (71.43)	df=1	
			$P=0.011$	
Gender	**No need to travel**			
	Not reported (%)	Reported (%)		
Male	170 (56.48)	131 (43.52)	$\chi^2=5.4490$	Significant
Female	131 (46.79)	149 (53.21)	df=1	
			$P=0.019$	
Streams of education	**Available at any time**			
	Not reported (%)	Reported (%)		
Medicine and allied	205 (53.25)	180 (46.75)	$\chi^2=10.8116$	Significant
Engineering	61 (40.40)	90 (59.60)	df=2	
Others	29 (64.44)	16 (35.56)	$P=0.0045$	
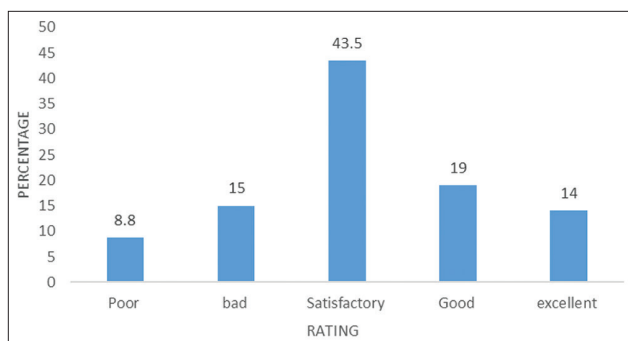
Figure 2: Rating of Experience of Online Learning

Discussion

Out of total 581 students, 301 (52%) were male and 280 (48%) were female and 92% of them belong to the age group of 18–25 years. Students were participated from 18 different states of India, most of the students 336 (57.83%) were from Maharashtra as the investigator is from Maharashtra. Majority of the students were from medical and allied branches (66.36%) followed by engineering 26%, because these students are more compatible with new technology and as these students have tendency to react promptly than other students so their participation was good.

In this study, it is noted that most common online tool used by the colleges to complete the syllabus was Zoom app (53%), followed by Email (21.17%), Google Hangout (13.08%), YouTube (12.22%), LMS (3.95%), Microsoft Teams (3.95%), and others (8.77%) (Skype, WhatsApp, Webex, Google classroom, and Google Forms). These findings were correlated with other similar studies.[4,6,7] In spite of the security issues associated with Zoom app, it was the commonly used application because it is user friendly and free software.[8,9]

Table 3: Disadvantages of online teaching cross-tabulated with demographic factors

Demographic variable	Disadvantages		Result statistics	Interpretation
Gender	**Less time given for discussion**			
	Not reported (%)	**Reported (%)**		
Male	199 (66.11)	102 (33.89)	χ^2=4.2098	Significant
Female	207 (73.93)	73 (26.07)	df=1 P=0.0401	
Streams of education	**Needs Wi-Fi**			
	Not reported (%)	**Reported (%)**		
Medicine and allied	218 (56.62)	167 (43.38)	χ^2=9.5194	Significant
Engineering	65 (43.05)	86 (56.95)	df=2 P=0.0086	
Others	28 (62.22)	17 (37.78)		
Streams of education	**Attention span is less**			
	Not reported (%)	**Reported (%)**		
Medicine and allied	226 (58.70)	159 (41.30)	χ^2=27.0155	Highly significant
Engineering	123 (81.46)	28 (18.54)	df=2 P=0.000	
Others	34 (75.56)	11 (24.44)		

In the present study, most of the students 289 (50%) said that they read the books during lockdown, followed by participation in online courses 276 (47.50%), webinars 104 (18%), and e-library 75 (12.9%) and other 26 (4.4%) which include hobby classes and exercise. As the students did not want to waste time, they read the books available with them as well as from e-library and also attended the webinars and online courses to increase their skills. Female participants (Chi-square = 6.4460, df = 1, P = 0.011) and engineering students (Chi-square = 10.8116, df = 2, P = 0.0045) did significantly more online courses during lockdown. There was no statistical significance observed as per gender, age group, or stream in other methods of utilizing time.

In the present study, it was observed that 251 (43.9%) students rated online teaching-learning experience as satisfactory followed by good 110 (19%) students, it means that students are comfortable with the online teaching. Similar observations were found in other study.[6] However, nearly 23% reported as poor and bad.

In the present study, advantages of online learning reported by students were, lectures can be attended from anywhere (66.26%), lectures available at any time (49.22%), no need to travel (48.19%), saves time (25.99%), easy to understand the concept (23.92%), saves money (16.86%), and less distractions (11.70%); while disadvantages reported were less

clearance of the concept (50.77%), no interaction with the teacher (45.77%), needs Wifi connectivity (46.47%), attention span is less (34.08%), lectures removed after specified time (31.67%), less time given to students (30.12%), and needs laptop (26.50%). These findings are correlated with the other similar studies.[7,10-13]

In the present study, females reported advantages of online teaching as it can be attended from anywhere (χ^2 = 6.4350, df = 1, P = 0.011) and no need to travel (χ^2 = 5.4490, df = 1, P = 0.019) and found statistically significant. Students from the age group of >30 years also reported no need to travel as advantage of online teaching and found statistically significant. (χ^2 = 6.7076, df = 2, P = 0.035). Students of engineering stream reported advantages of online teaching as lectures are available at any time and found statistically significant (χ^2 = 10.8116, df = 2, P = 0.0045). However, students from the age group of 18 to 25 years reported that it does not saves time and found statistically significant (χ^2 = 9.214, df = 2, P = 0.01).

In the present study, females did not agree that less time is given for discussion in online teaching and found statistically significant (χ^2 = 4.2098, df = 1, P = 0.0401). Engineering stream students reported that online teaching needs wifi and found statistically significant (χ^2 = 9.5194, df = 2, P = 0.0086). Medicine and allied stream students reported that

Demographic variable	Difficulties faced		Result statistics	Interpretation
Table 4: Univariate analysis of factors for difficulties faced for online teaching				
Stream of education	**Lack of learning environment**			
	No	Yes		
Medicine and allied	172 (44.68)	213 (55.32)	χ^2=17.8762 df=2 P=0.0001	Highly Significant
Engineering	90 (59.60)	61 (40.41)		
Others	32 (71.11)	13 (28.89)		
Stream of education	**Lack of internet facility**			
	No	Yes		
Medicine and allied	293 (76.10)	92 (23.90)	χ^2=20.38 df=2 P=0.000	Highly Significant
Engineering	86 (56.95)	65 (43.05)		
Others	28 (62.22)	17 (37.78)		
Stream of education	**Faced poor connectivity**			
	No	Yes		
Medicine and allied	285 (74.03)	100 (25.97)	χ^2=15.25 df=2 P=0.005	Significant
Engineering	86 (56.95)	65 (43.05)		
Others	33 (73.33)	12 (26.67)		
Age group	**Faced poor connectivity**			
	No	Yes		
18–25	387 (72.26)	149 (27.80)	χ^2=24.10 df=2 P=0.000	Highly Significant
26–30	9 (45.00)	11 (55.00)		
>30	8 (32.00)	17 (68.00)		
Gender	**Audio was not clear**			
	No	Yes		
Male	194 (64.45)	107 (35.55)	χ^2=15.57 df=1 P=0.000	Highly Significant
Female	135 (48.21)	145 (51.79)		
Stream of education	**Audio was not clear**			
	No	Yes		
Medicine and allied	206 (53.51)	179 (46.49)	χ^2=10.67 df=2 P=0.0048	Significant
Engineering	102 (67.55)	49 (32.45)		
Others	21 (46.67)	24 (53.33)		

attention span is less in online teaching and found statistically significant (χ^2 = 27.0155, df = 2, P = 0.000). Hence, students were having satisfactory experience of online teaching but it should be made more interactive and good network should be available.

In this study, the most common difficulties faced by the students while online learning was "lack of learning environment" (49%), "audio not clear" (43%), and "No internet facility" (30%). "Lack of internet facility" and "Poor connectivity" were significantly associated with engineering stream students. For medical students, "lack of Environment at home" was found significant (χ^2 = 17.8762, df = 2, P = 0.0001) while for other streams and female students, "audio not clear" (χ^2 = 15.57, df = 1, P < 0.001) was found significant. As most of the students were accessing lectures using the smartphone and from remote area where internet issues were present and as most of the families are joint families where overcrowding is present, students were not getting the good environment for attending the classes, similar challenge was noted by Raju.[14] Hence, it is necessary to establish the high-quality internet coverage in the country at the affordable cost including rural and remote areas. Furthermore, need to

Table 5: Effects of lockdown on examination and future of the students					
Stream of education	Effect of lockdown			Result statistics	Interpretation
Hands-on experience of the curriculum suffered	No	Yes	Can't say		
Medicine	37 (9.61)	305 (79.22)	43 (11.17)	χ^2=7.763 df=4 P=0.1007	Not significant
Engineering	20 (13.25)	104 (68.87)	27 (17.88)		
Others	6 (13.33)	31 (68.89)	8 (17.78)		
Any examinations cancelled	No	Yes			
Medicine	237 (61.56)	148 (38.44)		χ^2=17.6847 df=2 P=0.0001	Highly significant
Engineering	63 (41.72)	88 (58.28)			
Others	23 (51.11)	22 (48.89)			
Worried about the future	No	Somewhat	Yes		
Medicine	61 (15.84)	138 (35.84)	186 (48.31	χ^2=26.4349 df=4 P=0.000	Highly significant
Engineering	12 (7.95)	29 (19.21)	110 (72.85)		
Others	6 (13.33)	14 (31.11)	25 (55.56)		

distribute the educational devices enabled for online learning to the students on the priority basis.

In this study, 440 (75.73%) students were agreed that hands-on training of the curriculum was suffered because of lockdown as shown in Table 5. Overall, it is more for medical graduates but the difference was not found statistically significant. It is because as the students left the hostels, colleges, and went back to their hometown even though the lectures are being taken online, practical could not be carried out during lockdown, and for medical graduate, it was not feasible to carry out patient based clinics/practical's. These findings are correlated with the similar other study.[15,16] Hence, we require to include online practical training in the form of online demonstration of physical examination and procedures, use of objective structured clinical examination videos, and web-based video conference system for teaching surgical skills. It is already used in many developed countries such as Japan and America and proven helpful.[17-19] However, it should be supplemented with bedside clinical teaching through live video classes.

It was noted that for 258 (44.41%) participants, examination was cancelled because of lockdown as per Table 5, this is comparable to the other studies.[20,21] Initially, because of lockdown, all the colleges were closed down till July 31, 2020.[22] After July 2020 as the pandemic was on its peak in India; parents, students, and many universities were protesting to conduct the physical examinations. In India as per UGC out of the 755 universities, 194 have already conducted examination (online/offline); and 366 are planning to conduct examination (online/ offline/blended mode) in August/September.[23] To complete the examinations, university may adopt the alternative and simplified modes of examinations of short duration which includes MCQ-based assessments, open academic book examinations, and presentation-based assessments.[24]

About 81% of the participants in this study were worried about their future and job placement. This is because of the almost all examinations were cancelled initially by UGC and decided to promote the students, without conducting exams in the current academic year, then supreme court directed to conduct and finish all the examinations till September.[20,23] which has extended the term.[25] Same has been quoted by some studies.[26,27] also there was fear in students mind that they will not be selected for particular jobs as students would be labeled as "COVID Batch." Sanctity of their degree will remain questionable.[28] In view of COVID pandemic, many competitive examinations were postponed till September 2020 which questioned the job placement in the government setup.[29,30]

Conclusion
Although the overall experience of the online teaching was good for the participants in this study, still many difficulties were faced by them. Hands-on training of the curriculum were affected and examination was cancelled, so students were worried about the job placements in future.

Acknowledgment

Recommendations

This study recommends that as the COVID-19 pandemic is still going on and we cannot say how long it will continue. Hence, online teaching is the need of hour. There is a definite necessity for online practical sessions across all streams. Appropriate app needs to be identified for the same. For smooth conduction of teaching online, there should be good quality network made available in all the parts of the country which should also be cost effective. Furthermore, government should establish offline modes of teaching like using radio and television channels. Universities and colleges also need to adopt the online assessment method in near future for the students of higher education, so any of the pandemic or emergency situation will not lead to cancellation and postponement of examinations.

Limitations of the Study

As this is an online survey, students who were not having smartphones/laptops or having no access to internet were not included in this study, so these findings are not generalized to all the students of the country.

Conflicts of Interest

Source of Funding

References

1. World Health Organization. Coronavirus Disease 2019 and Influenza 2019-2020 Situation Report-106. Geneva: World Health Organization; 2020. Available from: https://www.who.int/emergencies/diseases/novel-coronavirus-2019%0A. [Last accessed on 2020 Dec 22].

2. Welfare Ministry of Health and Family. Covid 19 Dashboard. India: Government of India; 2020. Available from: https://www.mohfw.gov.in. [Last acceesed on 2020 Dec 23].

3. Government of India. Press Release. Government of India Issues Orders Prescribing Lockdown for Containment of COVID-19 Epidemic in the Country. India: Government of India; 2020.

4. Shenoy V, Mahendra S, Vijay N. COVID 19 lockdown technology adaption, teaching, learning, students engagement and faculty experience. Mukt Shabd J 2020;9:698-702.

5. Questionnaire-google form. 2020. Available from: https://docs.google.com/forms/d/1uSmWb_bhBs04TFRlnXhJvZtELf1x3MwUTAN5KX5M9wk/

6. Lall S, Singh N. COVID-19: Unmasking the new face of education. Int J Res Pharm Sci 2020;11:48-53.

7. Luaran JE, Samsuri NN, Nadzri FA, Rom KB. A study on the student's perspective on the effectiveness of using e-learning. Proc Soc Behav Sci 2014;123:139-44.

8 Use Zoom at Your Own Risk: Privacy Concerns Around this Viral Video Conferencing App. Hindustan Times; 2020. Available from: https://www.tech.hindustantimes.com/tech/news/use-zoom-at-your-own-risk-privacy-concerns-around-this-viral-video-conferencing-app-story-SHZUlcBFegHvNIDKKT0vKK.html. [Last acceeed on 2020 Dec 18].

9. Tom Warren. Zoom Faces a Privacy and Security Backlash as it Surges in Popularity; 2020. Available from: https://www.theverge.com/2020/4/1/21202584/zoom-security-privacy-issues-video-conferencing-software-coronavirus-demand-response. [Last acceeed on 2020 Dec 21].

10. Serlin R. The Advantages and Disadvantages of Online Courses Based on Experiences in Teaching; 2005. Available from: http://www.nces.ed.gov/pubs2002/200201. [Last acceeed on 2020 Nov 06].

11. Zounek J, Sudický P. Heads in the Cloud : Pros and Cons of Online Learning. Vol. 2. Prague: DisCo; 2016.

12. Mukhtar K, Javed K, Arooj M, Sethi A. Advantages, limitations and recommendations for online learning during covid-19 pandemic era. Pak J Med Sci 2020;36:S27-31.

13. Gilbert B, John S, College F. Online learning revealing the benefits and challenges. Fish Digit Publ 2015;4:1-34.

14. Raju H. Covid-19 lockdown-challenges to higher education. Int Multidiscip Double Blind Peer Rev Res J 2020;2:26-8.

15. Ahmed H, Allaf M, Elghazaly H. COVID-19 and medical education. Lancet Infect Dis 2020;2019:30226.

16. Jadhav V, Bagul T, Aswale S. COVID-19 Era: Students' Role to Look at Problems in Education System during Lockdown Issues in Maharashtra, India. Int J Res Rev. 2020;7(5):328.

17. Chandrasinghe P, Siriwardana R, Kumarage S, Munasinghe BN, Weerasuriya A, Tillakaratne S. A novel structure for online surgical undergraduate teaching during the COVID-19 pandemic. BMC Med Educ 2020;20:1-7.

18. Manabe T, Takasaki M, Ide T, Kitahara K, Sato S, Yunotani S, *et al.* Regional education on endoscopic surgery using a teleconference system with high-quality video via the internet : Saga surgical videoconferences. BMC Med Educ 2020;20:1-5.

19. Yang Y, Linda F. Students' Perceptions Towards the Quality of Online Education : A Qualitative Approach. Chicago, Il: Association for Educational Communications and Technology; 2003.

20. Longhurst G, Stone D, Dulohery K, Scully D, Campbell T, Smith C. 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. Anat Sci Educ 2020;13:301-11.

21. Sahu P. Closure of universities due to coronavirus disease 2019 (COVID-19): Impact on education and mental health of students and academic staff. Cureus 2020;2019:4-9.

22. Department of Higher Education. Ministry of Human

Resource G. MHA Guidelines for Phased Reopening (Unlock 2). Tamil Nadu: Department of Higher Education; 2020.

23. UGC India. Terminal Semester (s)/Final Year Examinations for The Universities. New Delhi: UGC-Press Release; 2020. p. 110002.
24. UGC India. UGC Guidelines on Examinations and Academic Calendar for the Universities in View of COVID-19 Pandemic and Subsequent Lockdown University Grants Commission Bahadur Shah Zafar Marg. New Delhi: UGC India; 2020. Available from: http:/www.ugc.ac.in. [Last acceesed on 2020 Dec 18].
25. Reddy R. With Exams Delayed, Engg. Students Worried Over Losing Placements. India: The Hindu.
26. Jena PK. Impact of pandemic COVID-19 on education in India. Int J Res Commer Manag 2020;5:7-11.
27. Kumar R. Impact of CoViD-19 on MBA Students. IIt Nagpur; 2020. Available from: https://www.iimnagpur.ac.in/impact-of-covid-19-on-mba-students. [Last acceesed on 2020 Dec 15].
28. Chaterjee C. Maharashtra: Degrees Sans Exams Will Impact Career of Students, Says UGC Vice-chairperson. Thailand: TNN; 2020.
29. Sharma S. MPSC Prelims Exam Postponed Again Due to Covid-19. India: The Times of India; 2020.
30. Chhapli H. Postponement Will Lead to Zero Academic Year: IIT. Thailand: TNN; 2020.