

Mental Status, Attitude, Awareness among Dental Students towards Covid Lockdown and Virtual Learning

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ABSTRACT

Background: The enactment of lockdown and social distancing has been enforced as one of the preventive measures to minimize the spread of novel coronavirus. The strict isolation measures and delay in starting schools and colleges across the country is expected to influence the mental health of the students. Hence, the present study aims to assess the mental status of the dental students, attitude towards virtual learning and awareness towards COVID 19.

Materials and methods: An online survey was conducted among dental students. The questionnaire was categorised under 4 topics and it consisted of total 28 questions. This study included a total of 5000 dental students aged 18-40 years.

Results: 44.7 % were undergraduates and 55.3 % were postgraduates and 35.1% of dental students are from South India. 79.3% of undergraduates reported they feel isolated and depressed in this lockdown. 98.2% of postgraduates commented that virtual classes are efficient and interactive. 90.2% of postgraduates and 91.9% of undergraduates reported e-learning taking a serious toll on physical health. 88.5% of dental students showed sufficient awareness towards PPE and SOP. Results showed, both the undergraduate and postgraduate students feel E-learning is efficient but undergraduate students feel more recessed when comparing to the postgraduate students.

Conclusion: The results also revealed that both the group students had a fair knowledge regarding the Standard operating procedures (SOP). Training in institutions regarding the usage of Personnel protective equipment's before the clinical postings for all students should be mandatory.

Key words: Attitude, Awareness, Covid 19, Dental students, Mental status

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INTRODUCTION

Covid 19 outbreak has led people to engage in social distancing, as a critical way to flatten the curve. In addition to the uncertainty and stress of the global outbreak, spending time in lockdown could take a serious mental toll such as insomnia, anxiety and depression. It can make people to feel isolated and lonely and also it can precede long term effects such as mental stress and disorder [1-2]. The World Health Organization (WHO) defines Stress as a "result of certain external physical or mental factors that affect an individual's physical

and psychological well-being" and depression as "a common mental disorder, characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite and feelings of tiredness and poor concentration. It can be long-lasting or recurrent, substantially impairing a person's ability to function at work, school or cope with daily life" [3].

Impact on dental education

During the present pandemic crisis where the entire globe is sailing amid the storm, technology has played a pivotal role. Technological development and the internet have changed the lives of people immensely and have also brought a huge change in various fields [4]. Especially in the education system virtual learning has been found to be a significant tool for effectively continuing the teaching-learning process during the lockdown. The mediums of E-learning and principles of artificial intelligence are gradually gaining popularity in the world as a new form of schooling [5,6]. The pros and cons of the system are always relative to the student. Since dentistry

is primarily a profession in clinical practice, the use of stratagems in virtual learning remains as a challenge for universities around the world.

Commendations issued by WHO

In the current COVID 19 pandemic, Dentists, auxiliaries as well as patients undergoing dental procedures are at high risk of cross-infection. Most dental procedures particularly aerosol generating procedures require close contact with the patient’s oral cavity, saliva, blood, and respiratory tract secretions. So, it is suggested that all patients visiting a dental office must be treated with due precautions [7].

Maintain a Physical/Social distancing, Do Telephone triage to all patients, Take temperature readings, Install physical barriers, use of 1% hydrogen peroxide to rinse, Dental settings should follow standard operatory protocols describing safe donning/doffing PPE, use of N95 face masks and protective eyewear/face shield.

Avoid aerosol-generating procedures whenever possible and consider the use of a portable HEPA air filtration unit as a preventive measure.

And, it’s of paramount importance, to fumigate regularly in clinical setup.

Although there is surplus of studies published regarding COVID-19, there is a paucity of published data regarding the mental health status of the students during lockdown and virtual learning. Therefore the present survey was intended to assess the mental status of the dental students, attitude towards virtual learning and awareness towards the standard operating procedures after COVID lockdown.

MATERIALS AND METHODS

Study design

This survey was conducted in the Department of Orthodontics and Dentofacial Orthopedics, Sathyabama Dental College, Chennai in August 2020. Ethical approval was obtained from the Institutional Review Board (150/IRB-IBSEC/SIST) at Sathyabama Dental College. This was a pan-Indian online survey for assessing the mental status, attitude and awareness towards COVID lockdown among dental students. A pre structured self-administered, web-based questionnaire was designed using Google forms and disseminated among undergraduate and postgraduate dental students through several social media forums. Anonymity was ensured and no personal identifications were collected.

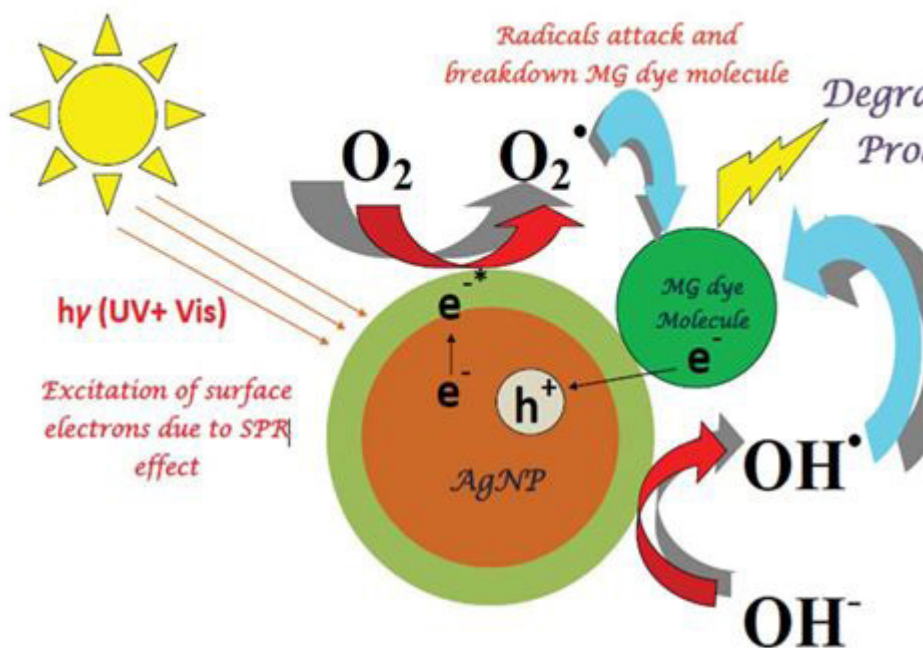


Figure 1: Silver nanoparticles synthesized from several biological resources [4].

The survey rendered 5000 responses. The data was analyzed using the percentages of the total and Chi-square test. This survey contains 28 questions with multiple choice answers and divided into four sections.

Socio-demographic characteristics.

Mental status during COVID lockdown.

Attitude towards virtual learning.

Awareness towards the standard operating procedures after COVID lockdown.

Eligibility criteria

Inclusion criteria

Undergraduate dental students.

Postgraduate dental students.

Exclusion criteria

General population.

Practicing doctors.

Academicians.

Sample size calculation

For this survey, z value at a confidence level of 95% (z) was 3.4, with the prevalence of awareness about COVID was 0.3 (p), and error (ε) of 3.2% was used to calculate the sample size. Estimated minimum sample size required was 4280.

$$n = z^2 \times p(1 - p) / \epsilon^2$$

n: Sample size;

z: z score;

p̂: Population proportion (probability);

ε: Margin of error.

Validity and reliability of the questionnaire

The face validity of the questionnaire was evaluated the ease of understanding questions. Cronbach’s alpha was

used to measure the reliability and gave a score of 0.991, which indicated good reliability. A clinical psychiatrist opinion was taken for content validation of the questions under mental status category to ensure firmness.

RESULTS

This study encompassed a total of 5000 dental students. 44.7 % were undergraduate students and 55.3 % were postgraduate students, 55.4% were females and 44.6% were males. Their age ranged from 18-40 years of age and it was seen that most of the respondents were aged between 20-30 years (79.8%) (Table 1).

A comparison was made among the undergraduates and post graduates dental students. Most of the undergraduate students felt depressed and isolated in this lockdown (79.3%) and also they stated that spending excessive time on social media (89.7%), alteration in their sleeping pattern (90.2%) and eating pattern (84.6%). And also they reported they had a negative feelings like blue mood, despair and depression more often (86.8%). And, most of the undergraduate students feel upset about joining dental school (51.5%), and they feel they are losing their clinical skills with time (52.7%). Whereas, most of the postgraduate students were under mental pressure of upcoming exams (89.6%) and worried about their patients missing appointments (37.6%). Significant differences were observed between both the groups for the entire variable (Table 2).

98.2% of postgraduate students reported that virtual classes are efficient and interactive. Whereas, most of the undergraduates described they face difficulties in understanding the concepts, visualising and correlating them (62.8%). But when we questioned about whether the virtual learning is taking a serious toll on physical health unanimously both the postgraduates (90.2%) and undergraduates (91.9%) agreed to it. And also (37.2%) of the undergraduates reported that their academic pursuits has declined. Significant differences

Table 1: Sociodemographic variables.

Variable	Undergraduate	Post graduate	Total	%	
Age of the participant	Less than 20 years	108	-	108	2.20%
	20 – 25 years	983	1155	2138	42.70%
	25- 30 years	996	857	1853	37.10%
	More than 30 years	147	754	901	18%
Gender	Male	762	1469	2231	44.60%
	Female	1472	1297	2769	55.40%
Year of Study	1st year	70	356	426	9.30%
	2nd year	327	1443	1770	35.40%
	3rd Year	253	967	1220	24.50%
	4th Year	333	-	333	4.50%
	House Surgeon	1251	-	1251	26.30%
Zone	Central	115	224	339	7.80%
	East	205	444	649	13.20%
	North East	15	83	98	3.10%
	North	230	498	728	14.30%
	South	832	1278	2110	35.10%
	West	837	239	1076	26.50%
Total	2234	2766	5000	100%	

Table 2: Mental status of the dental students in this lockdown.

S. NO	Variable	Undergraduates		Postgraduates		Total		Chi Square	P value	
		N	%	N	%	N	%			
1	Are you feeling depressed and isolated?	Yes	1641	79.3	1073	43.4	2714	54.3	337.676	0.001*
		No	510	17.7	1277	50.3	1787	35.7		
		May be	83	3	416	6.3	499	10		
2	Are you spending lot of time on social media?	Yes	1950	89.7	1478	69.2	3428	79.2	434.446	0.001*
		No	137	5	728	17.6	865	7.7		
		May be	147	5.3	560	13.2	707	13.1		
3	Do you think your sleeping pattern has changed?	Yes	1964	90.2	1117	52.4	3081	72.2	1045.766	0.001*
		No	127	4.6	769	20.3	896	7.3		
		May be	143	5.2	880	27.3	1023	20.5		
4	Are you eating more or less in this lockdown?	Yes, More	1409	84.6	1019	49.6	2428	57.2	1215.314	0.001*
		No, Less	258	5.1	756	23.1	1014	19.6		
		No Change	567	10.3	991	27.3	1558	23.2		
5	How often do you have negative feelings?	Yes, Often	1987	86.8	723	24.9	2710	54.2	911.255	0.001*
		Yes, Sometimes	204	11.5	1632	56.8	1836	36.5		
6	Do you feel upset about joining dental school?	No Never	43	1.7	411	18.3	454	9.3	607.184	0.001*
		Yes	1151	51.5	544	19.9	1695	31.9		
		No	630	31.1	1770	63.8	2440	43.9		
7	Are you under mental pressure about exams?	May be	453	17.4	452	16.3	905	24.2	802.309	0.002*
		Yes	1268	56.8	2478	89.6	3746	74.9		
		No	381	17.1	224	8.1	605	12.1		
8	Do you feel like you are losing clinical skills?	May be	585	26.2	64	2.3	649	13	400.692	0.001*
		Yes	1459	52.7	1019	45.6	2478	49.7		
		No	355	21.5	927	29.5	1282	25.9		
9	Are you worried about your patients missing appointments?	May be	420	25.8	820	24.9	1240	24.4	596.793	0.001*
		Yes, as the treatment procedures are not complete yet	580	26	1040	37.6	1620	32.4		
		No, its manageable	743	33.3	1422	51.4	2165	43.3		
		No, not involved in clinical postings	911	40.8	304	11	1215	24.3		

*Highly statistically significant

Table 3: Attitude towards virtual learning.

S No	Variable	Undergraduates		Postgraduates		Total		Chi Square	P value	
		N	%	N	%	N	%			
1	Do you think virtual classes are efficient and interactive?	Yes, Always	388	17.4	682	24.7	1070	21.4	472.299	0.001*
		Yes, Some Classes	1393	62.4	2034	73.5	3427	68.5		
		No	453	20.3	50	1.8	503	10.1		
2	Is virtual learning taking a toll on your physical health?	Yes	2054	91.9	2495	90.2	4549	91	15.098	0.001*
		No	52	2.3	120	4.3	172	3.4		
		May be	128	5.7	151	5.5	279	5.6		
3	Do you face difficulty in understanding the concepts?	Yes	1607	62.8	1157	41.8	2764	55.3	57.612	0.000*
		No	416	26	1238	51.6	1654	27.7		
		May be	211	11.2	371	7.5	582	17		
4	Do you feel your academic pursuits has declined?	Yes	832	37.2	937	33.9	1769	35.4	176.177	0.002*
		No	520	23.3	1103	39.9	1623	32.5		
		May be	882	39.5	726	26.2	1608	32.2		

*Highly statistically significant

were observed between both the groups for the entire variable (Table 3).

Results showed 91.4% of dental students feel that dentists are being at a high risk of getting infected. And when we questioned about the telephonic triage, physical distancing in class rooms and clinical laboratories, recording patients temperature using non-contact Infrared thermometer and standard operating

procedures like donning and doffing of PPE, wear of N95 and fumigation protocols postgraduates exhibited a better awareness compared to undergraduate students. Also 95.3% of postgraduates feel that use of HEPA filters will prevent contamination during aerosol procedures. 69.8% of postgraduates reported that awareness towards covid is sufficient and 5.6% of postgraduates feel negative about the future of dentistry after Corona Virus

Table 4: Awareness towards the standard operating procedures after COVID lockdown.

S No	Variable	Undergraduates		Postgraduates		Total		Chi Square	P value	
		N	%	N	%	N	%			
1	Do you think that dentists are being at a risk of getting infected?	Yes	2123	95	2448	88.5	4571	91.4	103.748	0.001*
		No	79	3.5	107	3.9	186	3.7		
		May be	32	1.4	211	7.6	243	4.9		
2	Do you think it would be better to fix appointments through phone?	Yes, its better	2077	93	2655	96	732	94.6	22.142	0.001*
		No, it's acceptable	157	7	111	4	268	5.4		
3	Do you think it is mandatory to scan patients temperature?	Yes	1912	85.6	2487	89.9	4399	88	29.505	0.000*
		No	80	3.6	98	3.5	178	3.6		
		May be	242	10.8	181	6.5	423	8.5		
4	Do you think it is advantageous in changing the seating arrangement?	Yes	1950	87.3	2472	89.4	4422	88.4	6.127	0.004*
		No	91	4.1	105	3.8	196	3.9		
		May be	193	8.6	189	6.8	382	7.6		
5	Do you think which filters would be appropriate to prevent contamination?	HEPA-13	1346	60.3	1977	71.5	3323	66.5	430.747	0.002*
		HEPA-14	348	15.6	659	23.8	1007	20.1		
		ULPA-15	151	6.8	15	0.5	166	3.3		
		ULPA-16	270	12.1	96	3.5	366	7.3		
		No, Not Necessary	119	5.3	19	3.5	366	7.3		
6	Are you aware of the procedures followed during donning and doffing of PPE?	Yes	1640	73.4	2436	88.1	4076	81.5	176.27	0.000*
		No	594	26.6	330	11.9	924	18.5		
7	Do you think it is better to wear surgical mask on top of N95?	Yes	1615	72.3	2432	87.9	4047	80.9	230.905	0.000*
		No	152	6.8	147	5.3	299	6		
		Don't Know	467	20.9	187	6.8	654	13.1		
8	Do you think fumigation is necessary and how often should be done?	Yes, Once in a day	1197	53.6	1769	64	2966	59.3	64.874	0.002*
		Yes, Once in a week	881	39.4	816	29.5	1697	33.9		
		Yes, Once in a month	145	6.5	178	6.4	323	6.5		
		No, Not Necessary	11	0.5	3	0.1	14	0.3		
9	Do you think that awareness regarding COVID 19 is sufficient?	Yes	1192	53.4	1930	69.8	3122	62.4	676.912	0.000*
		No	486	21.8	806	29.1	1292	25.8		
		May be	556	24.9	30	1.1	586	11.7		
10	Are you feeling positive about the future of dentistry after Corona Virus Pandemic?	Yes, always Positive	1133	50.7	440	15.9	1573	31.5	1010.79	0.001*
		Yes, but sometimes not positive	760	34	2172	78.5	2932	58.6		
		No, Not Positive	341	15.3	154	5.6	495	9.9		

Pandemic. Significant differences were observed between both the groups for the entire variable (Table 4).

DISCUSSION

All pandemics that may occur or have occurred in the past are periodic in nature. In order to curtail this pandemic situation, the lockdown has been implemented [8]. The social or physical distancing and other COVID19 restrictions have caused significant disruption globally [9]. This altered mental health status stems from several aspects of disturbance from routine. The fear and anxiety related to pandemic also influence the behaviour of the people in the community mainly healthcare professionals and dentists and most importantly dental students [10,11]. Hence, this survey provides an insight on the mental status, attitude towards virtual learning and level of awareness and perception on infection control with a special emphasis on COVID-19 outbreak in 2020.

We have noticed that quarantine due to the COVID-19 pandemic has caused stress and changes in the learning behaviours of dental students. Both undergraduate dental

students and postgraduate dental students exhibited deterioration in their study and work performance. In a study conducted by Ahmad et al. [12], stated that 25.3% of respondents are feeling depressed and anxious about this ongoing Covid situation. Whereas, Hawryluck et al. [13] conducted a study on psychological effects during lockdown, and reported that people exhibited a high prevalence of psychological distress and depression 31.2%. In our present study 54.3% of respondents felt depressed and anxious and 79.2% of respondents stated that they spend excessive amount of time on social media (Facebook, Twitter, Instagram, Youtube, etc.) in order to distract themselves from the prevailing pandemic. In a study conducted by Absar Ahmad et al., stated that 15% of the respondents reported that their sleeping cycle has changed. In this present study, 72.3% of respondents presented variations in their sleeping pattern and 57.2% showed variations in eating pattern. In a study by Cao et al [14], reported 0.9% of the respondents were experiencing severe anxiety, 2.7% moderate anxiety, and 21.3% mild anxiety, whereas in our study, 54.2% of the respondents were experiencing severe negative feelings, 36.5% of the respondents were experiencing moderate

anxiety and 9.3% of the respondents were experiencing mild anxiety. In addition to this, in our study most of the postgraduate respondents 89.6% reported that they are under mental pressure of upcoming exams and 37.6% reported that they are worried about their patients missing appointments.

Education is one of the key factors in building a good nation [15]. The outbreak of the COVID-19 virus has caused a sudden suspension of schools, colleges and universities. Despite these hard times, teachers have been utilising virtual learning platforms to educate the students. In a study by Radha et al. [16,17], stated that 42.2% of respondents reported that virtual learning is better than the conventional learning, whereas in our study 89.9% of respondents reported that virtual learning is efficient and interactive than class room learning. In a study by Radha et al, stated that 47% of respondents reported that they face difficulties in virtual learning, whereas in our study, 91% of the students reported the major difficulty in virtual learning is its taking a serious toll on physical health and 55.3% of the students feel difficulties in understanding and visualising the concepts. In a study by Radha et al, stated that 41.1% of respondents reported that their academic pursuits have declined. A study by Cao et al., stated that approximately 25% of their sample reported experiencing anxiety symptoms, which were positively correlate with increased concerns about academic delays. In a study by Sultan Ayoub et al stated that 84% of the respondents reported deterioration in their academics. But in our study 35.4% of respondents reported that their academics had declined.

Airborne transmission may occur by any medical or dental procedures which generate respiratory aerosols. The results for Ahmed et al. stated that, 87% were aware of being high risk to get infected with COVID-19, in our study 91.4% of respondents were aware of being high risk to get infected with COVID-19. And also in our study, 94.6% of respondents reported that it would be better to fix appointments through phone, 88% of the respondents feel it is mandatory to scan and record patients temperature before commencing any dental procedures, 88.4% of respondents reported it would be advantageous in changing the seating arrangement, 95.3% of respondents reported that HEPA filters would be appropriate for aerosol generating procedures to prevent contamination.

Healthcare workers are constantly battling the COVID-19 pandemic. Keeping healthcare providers safe, healthy and available to work in this pandemic is critical. The consistent use of appropriate personal protective equipment-PPE will help assure the safety of the health care workers. A study by Ahsan Ali Siddiqui [18] reported that any PPE should not be used without proper training or a workshop and also he stated that one training in using PPE may not be good enough, as many problems may exist all the way. In our study 81.5% of respondents report that they are aware of donning and doffing

procedures of PPE. There are three types of masks namely single-use mask (single layer), surgical mask, and pollution mask (respirators) which prevent 90% of virus-sized particles. The respirators may include ratings such as N95, KN95, FFP1, FFP2, and FFP3. The N95 mask may prevent particles up to the size of 0.3 μ m [19]. In our study 80.9% of the respondents feel it is better to cover N95 mask by surgical mask to improve the lifespan of N95. Fumigation is a process of disinfecting or purifying an area with the fumes of chemicals. It is better to fumigate clinical areas habitually to prevent contamination. In our study, 59.3% of respondents reported that it is necessary to fumigate the clinics/laboratories on a regular basis. 25.8% of the respondents feel that the awareness regarding COVID 19 prevention is insufficient and so they required training for the patient management and 20.9% of the respondents feel negative about the future of dentistry after Corona Virus Pandemic. The findings of above study, state that both the undergraduate and postgraduate dental students feel virtual learning is effective. When the mental status was assessed it shows that undergraduate students feel more recessed when comparing to the postgraduate students. So, we suggest that undergraduate students need to be engaged in more of academic activities in order to overcome the present torment. The results also revealed that both the group students had a fair knowledge regarding the Standard operating procedures which needs to followed during clinical routines. Training in institutions regarding the usage of Personnel protective equipment's before the clinical postings for all students should be mandatory.

REFERENCES

1. Wang C, Pan R, Wan X, et al. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Int J Environ Res Public Health* 2020; 17:1729.
2. Brooks SK, Webster RK, Smith LE, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet* 2020; 395:912-20.
3. <http://www.who.int/topics/depression/en/>.
4. Nadikattu RR. Information technologies: Rebooting the world activities during COVID-19. *SSRN* 2020; 1-10.
5. Misko J, Choi J, Hong SY, et al. E-Learning in Australia and Korea: Learning from Practice. National Centre for Vocational Education Research (NCVER) 2004.
6. Soni VD. Challenges and solution for artificial intelligence in cybersecurity of the USA. *SSRN* 2020; 1-17.
7. Suri S, Vandersluis YR, Kochhar AS, et al. Clinical orthodontic management during the COVID-19 pandemic. *Angle Orthod* 2020; 90:473-484.
8. Pandey S, Kulkarni R, Bhavsar K, et al. Impact of the lockdown on mental health of dentists of India-a survey study. *Biomed Sci J* 2020; 1.
9. Usher K, Bhullar N, Jackson D. Life in the pandemic:

- Social isolation and mental health. J Clin Nurs 2020.
10. Gonzalez-Diaz JM, Lozano-Lesmes L, Campo-Arias A. Comment on "mental health: Why it still matters in the midst of a pandemic". Bra J Psychiat 2020.
 11. Silva DA, Pimentel RF, Merces MC. Covid-19 and the pandemic of fear: Reflections on mental health. Rev Saude Pub 2020; 54.
 12. Ahmed MA, Jouhar R, Ahmed N, et al. Fear and practice modifications among dentists to combat novel coronavirus disease (COVID-19) outbreak. Int J Environ Res Public Health 2020; 17:2821.
 13. Hawryluck L, Gold WL, Robinson S, et al. SARS control and psychological effects of quarantine, Toronto, Canada. Emerg Infect Dis 2004; 10:1206-1212.
 14. Cao W, Fang Z, Hou G, et al. The psychological impact of the COVID-19 epidemic on college students in China. Psychiatr Res 2020; 287:112934.
 15. Baiyere A, Li H. Application of a virtual collaborative environment in a teaching case. In AMCIS 2016: Surfing the IT Innovation Wave-22nd Americas Conference on Information Systems 2016.
 16. Radha R. Swami vivekananda's mission on man making education. Int J Emerging Technol Innovative Res 2019; 6:111-114.
 17. Radha R. Education for man making and character building: Inspirations from Swami Vivekananda. Swami Vivekananda Centre for Higher Research and Education 2019.
 18. Siddiqui AA. The role of personal protective equipment (PPE) in prevention of COVID-19 novel corona virus and fatalities occur due to non-availability of the PPE. Am J Biomed Sci Res 2020; 14:2642-1747.
 19. <https://smartairfilters.com/en/blog/comparison-maskstandards-rating-effectiveness/>