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Awareness, state of mind and implementation of online education during covid-19 outbreak in dental professionals and students in Gujarat.

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Abstract

Introduction: COVID 19 made a serious impact on many aspects of everyday life. The world saw a paradigm shift in the education system favoring online learning during constrains of pandemic. Electronic learning (e-learning) became the core method of teaching the curriculum during the pandemic.

Materials and Methods: A descriptive cross sectional questionnaire based online survey was designed. The survey included questions about student demographics, accessibility to internet, IT skills, platforms for online education, and likert scale questions. Chi square test was performed for statistical analysis and level of significance was set at $p \leq 0.05$.

Results: Total 1676 responses were received. Internet connectivity was in very high quality for majority of respondents (44.3%). Zoom was preferred platform of choice for online education (73.4%). Majority number of participants agreed (42.4%) that e learning in period of COVID-19 outbreak is helpful to students. Participation

and perception regarding online education varies with age i.e. it decreases with increase in age (48.8%). Majority of respondents strongly agreed (38.1%) that home environment distracts during online lectures.

Conclusion : Majority of Participants were aware and willing to implement e learning for continuous dental education during this time of pandemic.

Keywords: Academic crisis, Covid-19, dental education, online learning, perception.

Introduction

COVID 19 made a serious and sudden impact on many aspects of everyday life. World Health Organisation (WHO) announced COVID19 as a global public health emergency of international concern on 30th January 2020 and declared it a pandemic on 11th March 2020. With the COVID-19 -a novel corona virus disease spreading across the globe, many countries have implemented **lockdown** and ordered closure of all educational institutes. [1]

The education system is one of the most impacted aspects of routine learning and daily life. The COVID–19 pandemic has disrupted teaching. Typical face-to-face classes had to be suspended to ensure the safety of students and lecturers. To minimize the impact of lockdown, dental schools had to add another approach to teach dental students. The world saw a paradigm shift in the education system favouring online learning during the constrains of pandemic.

Fortunately, current technology enabled electronic learning (e-learning) to be the core method of teaching the curriculum during the COVID–19 pandemic. Yet, the effects and efficacy of online education and the capacity to successfully teach digitally is questionable. This sudden and rapid transformation from an environment of conventional learning to virtual learning has made a great impact on the attitude of the students towards learning. [2 &3]

E-learning is defined as using information technology to improve the quality of education. The success of e learning depends on many factors, including accessibility, usage of appropriate methods, course content, and assessment criteria. E-learning, like any method of teaching, has its advantages and disadvantages for both students and teachers. Besides the epidemiological benefits of e-learning during the COVID–19 pandemic, other benefits worth mentioning include increased convenience and access to resources regardless of location and time.[3]

Online classes also have limitations, including problems with internet access, poor internet connection quality, and insufficient digital skills of the respondents. Some benefits such as time flexibility can also be a limitation, especially for students who have difficulties with self-discipline. [3]

The use of technology in education is inevitable and online education seems to be the only logical solution during lockdown. Communication is mainly by creating web based live video conferencing platforms (Zoom, Skype, Cisco Webex, Google Hangouts). The success of online education depends on addressing the disparity across learning resources, use of technology, communication tools and the ability to understand information from sources like computers and mobile phones. The collection of the opinion was done of participants who have attended the online classes and their perceptions on continuing online classes in the “new normal” era. [4]

Hence to assess the awareness, state of mind and implementation of online education during covid-19 outbreak a survey was conducted.

Material and methods

Ethical approval was taken by ethical committee of College Of Dental Sciences and Research Centre, Bopal, Ahmedabad.

A descriptive cross sectional questionnaire based online survey was designed to assess the awareness, state of mind and implementation of online education. The questionnaire was prepared on Google form and distributed through online platforms to the undergraduate students, postgraduate students, academician and clinician in Gujarat. Each participant was allowed to fill the questionnaire once. All respondents were informed about the objectives of the study and agreed to voluntarily participate. A total of 1676 responses were collected for this study.

Questionnaire

The questionnaire consisted of 21 questions divided in four sections.

The first section included demographic details (gender, educational qualification, and years of experience), accessibility to internet, IT skills and the platform of choice for online education.

In the second section the responses were recorded based on a five point likert scale. The responses were categorized into the following: strongly agree, agree, neutral, disagree, and strongly disagree.

The third section included seven sets of options regarding the challenges faced during e-learning, from which the respondents could choose as many as were true for them.

In the last section, respondents were asked how prepared they are to shift to an online mode of education for the months to come.

The questionnaires were collected and the responses were entered on MS Excel and SPSS statistical program. The percentages of the responses were calculated.

Result

The questionnaires form of this survey was circulated among dental professionals and students in Gujarat. Total 1676 responses were received. The data were collected and evaluated with the help of MS excel and SPSS statistical program.

Out of the total respondents 1173(69.98%) were undergraduate students, 286(17.06%) were postgraduate students, 45(2.68%) were academician and 172(10.26%) were clinician and academician. Male to female ratio was approximately 2:5(30.01%:69.98%).

In response to the question regarding internet connectivity and bandwidth at their residence majority of responses 742(44.3%) suggested that they were aware of having live streaming of videos but not in very high quality followed by 614(36.6%) responses who stated that they can have live streaming of videos in high quality but the difference was not significant.

When enquired about their platform of choice for online education 1230(73.4%) respondents chose zoom followed by Google hangouts 185(11%), Cisco Webex 150(8.9%) and Skype 111(6.6%).

Majority of respondents 711(42.4%) agreed that Educating through e-learning in COVID-19 outbreak period would help students to have access to knowledge. 818(48.8%) respondents believed participation and perception regarding online education varies with age i.e. it decreases with increase in age. Majority of academician 28(62.2%) strongly disagreed with the use of e learning. There was significant difference among responses related to the future of web education and classroom learning. Majority of respondents 573(34.1%) agreed that web education may castaway classroom learning in the near future while few 175(10.4%) strongly disagreed with the same.

A mixed response of agreement (39.5%) and strong agreement (37.2%) was seen from respondents regarding decrease in effective collaboration with other colleague through e learning. When the respondents were inquired whether home environment distracts you i.e.

productivity/Ability to concentrate is less at home during online lectures than that at work place, majority of respondents i.e. 639(38.1%) strongly agreed to the same. 737(44%) respondents agreed that Web education can be enhanced by adding newer features like 3D animation. 816(48.7%) respondents were in agreement that webinar-based education can provide an opportunity for establishment of scientific links with faculty members and experts at home and abroad. All the responses were significant at p value ≤ 0.05.

The demographic distribution of responses based on gender is described in Graphs 1-3 and educational qualification is described in Table 1, Table 2, Table 3 and Table 4.

Discussion

COVID 19 has markedly hay wired conventional education practices. The present situation has made us implement an alternative and innovative approach in sustaining academics through online classes. Due to the constrains of classroom learning in this indeterminate time course of pandemic, online learning has come to the forefront to partly resolve perplexity.

Conventional learning has face to face interactions, motivates one to learn, better interactions among student and teacher and most important a feel of togetherness in learning and sharing opinions. Some of these aspects lack in online learning. On the other hand e-learning enabled them to increase their knowledge to the same extent as traditional learning. The awareness was seen in the participants regarding both conventional and e-learning. [2 & 5]

There are many platforms as of now available which can be used for e learning and online education. These platforms provide user access to group video calls and screen sharing options which helps user to present PowerPoint presentation and PDF while explaining the same. This platform also allows user to record the same which can be viewed later[5.] Common platform available in India are Google Meet, CiscoWebex, Skype, Teams, and Zoom.

Zoom worked out best for majority of the participants due to its various advantages like easy user interface; large number of participants can join at a same time and is available among most of the common platform like android, IOS and Windows. It has some limitations as well like it allows only 40 minutes of free meetings. Most of the respondents showed utmost awareness towards zoom (73.4%), making it the most accessible and feasible platform to attend online classes. [4 & 6]

Majority of the participants in our survey showed readiness towards replacing the classroom education with online education in near future. These can be understood as online education allows individual to break bounds of time and place for gaining knowledge and is more convenient to majority of population especially to young individuals. The findings by Johnson et al. (2008) indicates that developing and sustaining a collaborative learning space within an e-learning environment is essential for maximizing the satisfaction of the participants. [1 & 5]

E – Learning has its own shortcomings. The concern over technological constraints was reflected across all the responses [1 & 3]. Lack of access to internet will exclude some of the learners from the online classes. Slow connections can also make accessing course platforms and materials frustrating. Online classes will be successful only if internet facility is provided to all by making it equitable and affordable [7 & 8]. It is also important to feel comfortable using a computer and navigating the Internet. It was in line with the findings of Tsai & Lin (2004); Peng, et al. (2006) [1]. The main limitation of online education many faced was that the elder individuals were

not comfortable with it. There are multiple reasons like lack of knowledge regarding use of technologies and software, their habits of gaining and providing knowledge through class education for large period of their life and limited interaction with colleagues and students. Majority of response in our survey also believed that participation and perception of individual decreases with increase in age in case of online education. [7 & 9]

The survey suggested that the students preferred classroom learning for understanding and retention of a topic as home environment distracts them i.e. productivity/Ability to concentrate is less at home during online lectures. There was lack of free flowing conversations, debates and discussions during online class. The students also preferred classroom learning as practical knowledge, punctuality and self-discipline is better acquired through a reciprocal interaction among teachers and student in a classroom [7, 10]. But complete replacement of education system to e-leaning requires training and development of infrastructure by education institution.

Online learning creates a good platform for acquiring newer methods of learning with implementation of 3D animations [9 & 10]. Majority of the respondents were aware of the webinar based education and agreed that if implemented it can provide an opportunity for establishment of scientific links with faculty members and experts at home and abroad.

The survey also suggested that the respondents exhibited keenness to shift to an online mode of education for the months to come and successfully implemented the same.

Although there is a long way to go for online education to completely take over conventional means, one must take it into consideration that, in present times, it is the only means for institutions and/or teachers to reach learners virtually, enhances convenience and strengthens educational opportunities [8, 11] . But with correct implementation, training and means of availability of all the equipments, one can always make online education and conventional methods go work hand-in-hand thus playing an important role in the means of education for the future generation.

Conclusion

The following survey suggested that majority of the participants were aware that during this period of COVID, one must embrace the alternative to classroom learning and undertake online education to keep up with one's academic development. The participants were also aware of various platforms operated for the same. Consequently they showed willingness to get acquainted with this approach of learning. Majority of participants were able to successfully implement online learning during this pandemic and they feel fairly prepared to shift to an online mode of education for the months to come. However availability of high quality of internet connectivity will enhance this experience.

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Legend Tables and Figures

Table 1: Distribution of responses based on educational qualification

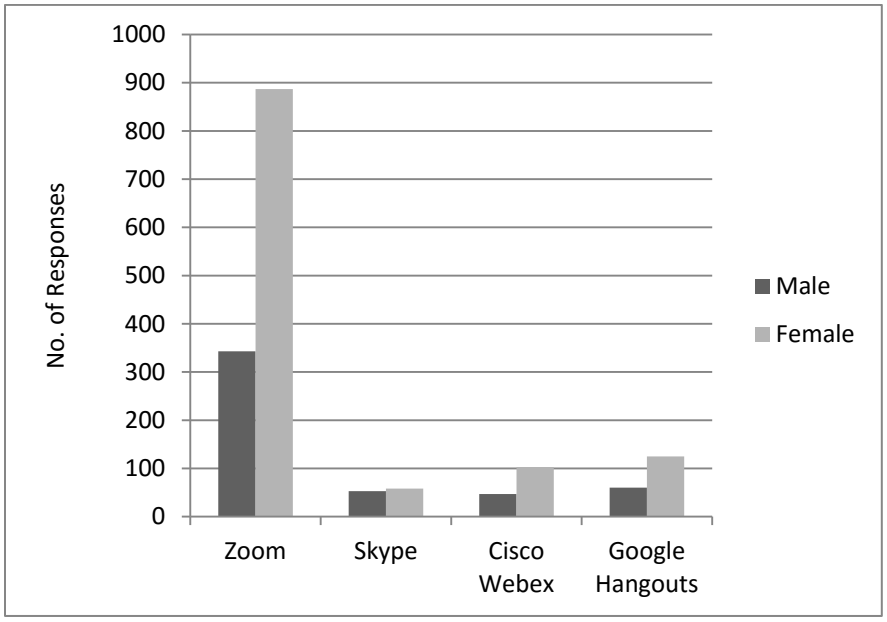
Question	Option	No. of Responses	Qualification			
			Under graduate student n(%)	Post graduate student n(%)	Academician n(%)	Clinician and Academician n(%)
Internet connectivity and bandwidth at your residence	I can have live streaming of videos in high quality	614	406 (34.6)	100 (35)	22 (48.9)	86 (50)
	I can have live streaming of videos but not in very high quality	742*	509 (43.4)	140 (49)	18 (40)	75 (43.6)
	I cannot live stream videos but I can download large files.	89	69 (5.9)	16 (5.6)	0	4 (2.3)
	I cannot live stream videos and I cannot download large files. Small files are not a problem though.	100	88 (7.5)	5 (1.7)	0	7 (4.1)

	The Internet connectivity is highly unreliable	131	101 (8.6)	25 (8.7)	5 (11.1)	0
Which of the following online audio/video conferencing platform worked out best for you?	Zoom	1230*	888 (75.7)	229 (80.1)	26 (57.8)	87 (50.6)
	Skype	111	83 (7.1)	7 (2.4)	0	21 (12.2)
	Cisco Webex	150	83 (7.1)	31 (10.8)	19 (42.2)	17 (9.9)
	Google Hangouts	185	119 (10.1)	19 (6.6)	0	47 (27.3)
* The value are significant at $p \leq 0.05$						

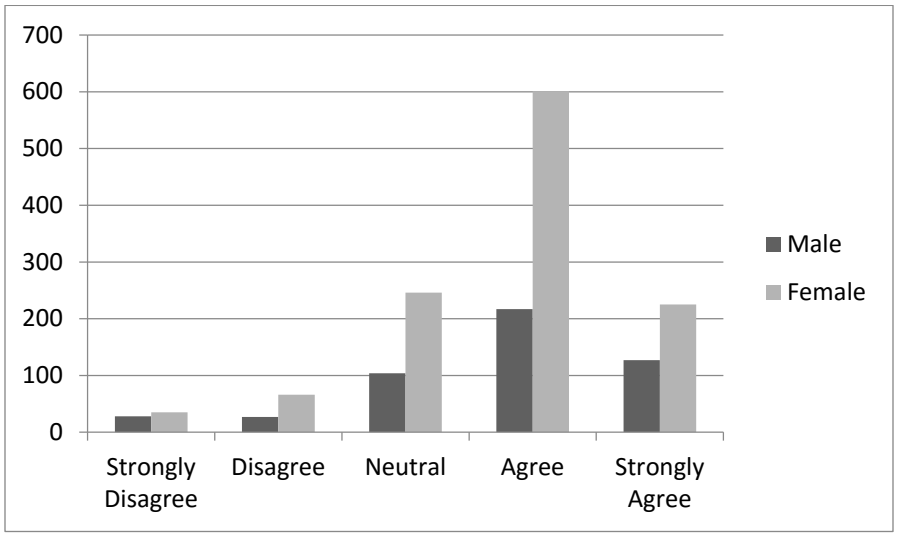
Table 2: Distribution of responses based on educational qualification

No.	Question	Options	Qualification			
			Under graduate student n(%)	Post graduate student n(%)	Academician n(%)	Clinician and Academician n(%)
1.	Educating through e-learning in COVID-19 outbreak period would help students to have access to knowledge	Strongly Disagree	61 (5.2)	0(0)	9(20)	16(9.3)
		Disagree	143(12.2)	21(7.3)	0(0)	14(8.1)
		Neutral	397(33.8)	64(22.4)	4(8.9)	9(5.2)
		Agree*	428(36.5)	149(52.1)	28(62.2)	106(61.6)
		Strongly agree	144(12.3)	52(18.2)	4(8.9)	12(15.7)
2.	Participation and perception regarding online education varies with age.	Strongly Disagree	34(2.9)	0(0)	5(11.1)	24(14)
		Disagree	75(6.4)	9(3.1)	6(13.3)	3(1.7)
		Neutral	289(24.6)	42(14.7)	0(0)	19(11)
		Agree*	566(48.3)	161(56.3)	22(48.9)	69(40.1)
		Strongly agree	209(17.8)	74(25.9)	12(26.7)	57(33.1)
3.	Web education provide an opportunity for establishment of scientific links with faculty members and experts at home and abroad.	Strongly Disagree	52(4.4)	5(1.7)	9(20)	16(9.3)
		Disagree	47(4)	15(5.2)	6(13.3)	15(8.7)
		Neutral	339(28.9)	40(14)	8(17.8)	27(15.7)
		Agree*	549(46.8)	161(56.3)	18(40)	88(51.2)
		Strongly agree	186(15.9)	65(22.7)	4(8.9)	26(15.1)
4.	Web education may castaway classroom learning in the near future.	Strongly Disagree	109(9.3)	34(11.9)	9(20)	23(13.4)
		Disagree	141(12)	59(20.6)	8(17.8)	31(18)
		Neutral	352(30)	57(19.9)	0(0)	32(18.6)
		Agree*	393(33.5)	97(33.9)	18(40)	88(51.2)
		Strongly agree	178(15.2)	39(13.6)	10(22.2)	22(12.8)
5.	Home environment distracts	Strongly Disagree	50(4.3)	19(6.6)	0(0)	4(2.3)

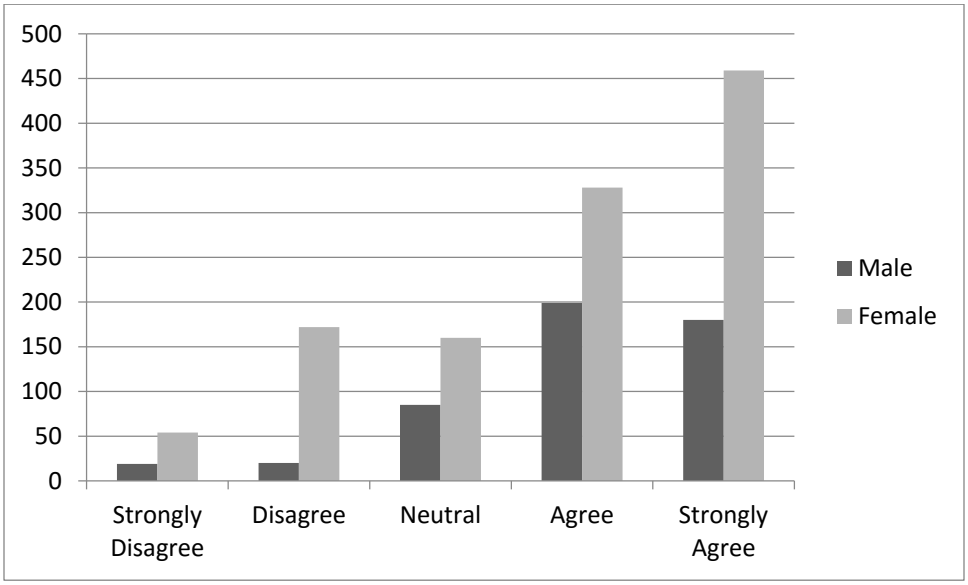
	you i.e. productivity/Ability to concentrate is less at home during online lectures than that at work place.	Disagree	151(12.9)	20(7)	10(22.2)	11(6.4)
		Neutral	195(16.6)	25(8.7)	8(17.8)	17(9.9)
		Agree	297(25.3)	132(46.2)	4(8.9)	94(54.7)
		Strongly agree*	480(40.9)	90(31.5)	23(51.1)	46(26.7)
6.	There is decrease in effective collaboration with other colleagues	Strongly Disagree	16(1.4)	13(4.5)	0(0)	4(2.3)
		Disagree	62(5.3)	30(10.5)	0(0)	19(11)
		Neutral	183(15.6)	43(15)	18(40)	3(1.7)
		Agree	443(37.8)	119(41.6)	8(17.8)	92(53.5)
		Strongly agree*	469(40)	81(28.3)	19(42.2)	54(31.4)
* The value are significant at $p \leq 0.05$						



Graph 1: Best online audio/video conferencing platform.



Graph 2: Participation and perception regarding online education varies with age.



Graph 3: Home environment distracts i.e. productivity/Ability to concentrate is less at home during online lectures than that at work place.

Table 3: Distribution of responses based on educational qualification

Question	Option	No. of Responses	Qualification			
			Under graduate student n(%)	Post graduate student n (%)	Academician n (%)	Clinician and Academician n(%)
In your opinion, how comfortable are you currently with respect to using computers and IT applications	Not very comfortable (need help in installing and configuring)	285	245 (20.9)	35 (12.2)	5 (11.1)	0 (0)
	Fairly comfortable	883*	630 (53.7)	143 (50)	12 (26.7)	98 (57)
	Comfortable (use many apps and can also help others)	508	298 (25.4)	108 (37.8)	28 (62.2)	74 (43)
Your mental acceptance and comfort level with online mode of education	I am fairly comfortable with online mode of education with almost no human contact hours	527	370 (31.5)	84 (29.4)	20 (44.4)	53 (30.8)
	I am comfortable with online mode of classes, although, I feel some human contact hours is necessary for doubt clearing	782*	508 (43.3)	159 (55.6)	16 (35.6)	99 (57.6)
	I am not comfortable with online mode of education	367	295 (25.1)	43 (15)	9 (20)	20 (11.6)

How prepared do you feel to shift to an online mode of education for the months to come?	Extremely prepared	124	97 (8.3)	5 (1.7)	10 (22.2)	12 (7)
	Fairly prepared	604*	381 (32.5)	137 (47.9)	18 (40)	68 (39.5)
	Somewhat prepared	599	410 (35)	92 (32.2)	12 (26.7)	85 (49.4)
	Inadvertently prepared	105	84 (7.2)	21 (7.3)	0 (0)	0 (0)
	Not prepared	244	201 (17.1)	31 (10.8)	5 (11.1)	7 (4.1)
* The value are significant at $p \leq 0.05$						

Table 4: Distribution of responses based on educational qualification

No.	Question	Options	Qualification			
			Under graduate student n (%)	Post graduate student n (%)	Academician n (%)	Clinician and Academician n (%)
1.	Coronavirus (COVID-19) outbreak has been disruptive to your regular learning experience.	Strongly Disagree	10 (0.9)	0 (0)	5 (11.1)	17 (9.9)
		Disagree	57 (4.9)	7 (2.4)	0 (0)	0 (0)
		Neutral	112 (9.5)	22 (7.7)	4 (8.9)	28 (16.3)
		Agree	435 (37.1)	137 (47.9)	32 (71.1)	64 (37.2)
		Strongly agree*	559 (47.7)	120 (42)	4 (8.9)	63 (36.6)
2.	Web education can be enhanced by adding newer features like 3D animation.	Strongly Disagree	28 (2.4)	0 (0)	5 (11.1)	16 (9.3)
		Disagree	70 (6)	29 (10.1)	0 (0)	9 (5.2)
		Neutral	164 (14)	48 (16.8)	0 (0)	16 (9.3)
		Agree*	512 (43.6)	120 (42)	22 (48.9)	83 (48.3)
		Strongly agree	399 (34)	89 (31.1)	18 (40)	48 (27.9)
3.	Social media has helped us gain information about webinars online.	Strongly Disagree	44 (3.8)	6 (2.1)	5 (11.1)	4 (2.3)
		Disagree	40 (3.4)	8 (2.8)	0 (0)	20 (11.6)
		Neutral	260 (22.2)	51 (17.8)	14 (31.1)	15 (8.7)
		Agree*	560 (47.7)	146 (51)	22 (48.9)	69 (40.1)
		Strongly agree	269 (22.9)	75 (26.2)	4 (8.9)	64 (37.2)
* The value are significant at $p \leq 0.05$						