Research Article

Perception of BDS students of Kathmandu University on online learning during COVID-19 pandemic

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ABSTRACT

Introduction: The spread of COVID-19pandemic has gripped the entire world and caused widespread public health concerns, hampered economics and education system immensely. Online classes have been an alternative to give continuity to the theory classes. The objective of this study is to assess the various aspects of online classes and perception of Bachelor of Dental Surgery (BDS) students of Kathmandu University (KU) during COVID-19 pandemic.

Materials and Method: Cross-sectional, questionnaire based descriptive study using online Google form was distributed among the BDS students of KU. The questionnaire was distributed via social media. Frequency distribution of the descriptive data was done. Chi-square test was done to assess the difference in perception about online classes between the basic science and clinical science students.

Result: 89% of the students had never attended any online classes before online education due to COVID-19 pandemic. 76.9% agreed that the online class is distracting. 57.5% used smartphone for seeking online class and medium most frequently used was Zoom platform. 70.2% students could ask questions, communicate & receive response during online class. 55.4% students disagreed that online classes are more effective. Statistical significant differences were seen in students submitting assignments, communication and practical simulation among basic science and clinical science students.

Conclusion: Online class can serve as an alternative effective educational tool. With more practice, system upgrading, capacity building of the student-teacher; it is bound to be more effective as well as efficient. The online class should be designed in such a way that student can focus and find it more interesting and should introduce various strategies to increase the interaction between students and teachers. Further, training on online class is required for both course recipients and providers.

KEYWORDS: BDS students, lockdown, online class, pandemic, perception.

INTRODUCTION

Corona virus disease 2019 (COVID-19) is an infectious disease caused by a novel virus which belongs to the virus family known as Corona virus. It has spread globally, resulting in Corona virus pandemic and gripped the entire world. World Health Organization (WHO) has declared COVID-19, a public health emergency and pandemic. Nepal, too is fighting COVID-19 pandemic like other countries in the world. Despite the continuous efforts to control the pandemic, COVID-19 cases have been persistently spreading and numbers are increasing day-by-day.

COVID-19 pandemic lockdown resulted in the closure of the vast majority of educational institutes like schools, colleges, universities etc worldwide.[1,2] These nationwide closures are impacting over 60% of the world's student population. Several other countries have implemented localized closures impacting millions of additional learners. Online learning has become the alternative

for education in order to control the risk of community transmission. Many educational institutes shifted to online learning via platforms like Zoom, Google Meet, Google Classroom, Microsoft Teams, D2L, Edgenuity etc.[3,4]

Digital technology can enable teachers and students to access specialized materials well beyond the textbooks, in multiple formats and in ways that can bridge time and space. The Organization for Economic Co-operation and Development has created framework to guide an education response to the COVID-19 pandemic for distance learning.

The aim of the study was to assess the perception of BDS students of KU on online learning during COVID-19 pandemic.

MATERIALS AND METHOD

The study design was descriptive, cross-sectional, questionnaire based which was conducted among the BDS students of Kathmandu University College namely; College of Medical Science (COMS), Kantipur Dental College (KDC), Kathmandu Medical College (KMC), Kathmandu University School of Medical Sciences (KUSMS), Nepal Medical College (NMC), and Nobel Medical College (NoMC). Structured questionnaire was used which consisted of two sections. The first section included demographic data and second section had questions about the perception of students on online learning during COVID-19 pandemic.The four likertscale ranged from "Strongly Agree", "Agree", "Disagree" to "Strongly Disagree". Further, five questions (Table 5) responses were merged to the category agreement i.e. (strongly agree & agree) and category disagreement (disagree & strongly disagree).

The study was conducted during May-July 2020. Ethical clearance was obtained from the IRC of Kantipur Dental College (IRC-16/020). BDS students studying under KU who were willing to participate, attending e-class and using social media were included. Sample size was calculated using the data from the study of Sub ediet al[5]: Sample size (n) = z^2pq/e^2=708.

Self administered online Google firm based survey questionnaire was sent via email, viber, facebook, etc to 1100 BDS students of KU. Among them, 894 students responded. Further, responses were refined and duplication was removed. Final analysis was done on 769 participants. Data was retrieved from the online survey, entered into Microsoft Excel and then imported into the Statistical Package for Social Sciences (SPSS) version 21. Frequency distribution was done for the descriptive data and Chi-square test was done to assess significant difference between the online class experience among the students. $p \leq 0.05$ was considered statistically significant.

RESULT

Table 1 highlights the demographic details of all respondents of KU dental colleges. Table 2 highlights the descriptive statistics on factual details of online class. Majority of the students used smartphone for seeking online class and medium used was Zoom platform. Table 3 highlights the dichotomous perceptional response of respondent on online class. 89.2% have never attended any online class before. 76.9% agreed that the online class is distracting. Table 4 shows the perceptional response of all respondents. 70.2% students can ask questions, communicate & receive response during online class.

Table 5 highlights the level wise dichotomous perceptional differences on online class. Statistically significant differences were seen among the basic and clinical science students who were able to submit assignment, perform practical/ clinical simulation exercise through online classes and if training was required for faculty.

Table 6 highlights the College-wise factual differences on online class. Majority of the participants used Zoom platform and the modality of online class was via Microsoft PowerPoint presentation. Table 7 highlights the College-wise perceptional differences on online class. 66% were able to submit assignments and 47% disagreed to perform class test. 59% strongly disagreed that practical/ clinical simulation exercise could be conducted through online class.

Table 1: Demographic details of all respondents of KU dental colleges

Parameters		COMS	KDCH	KMC	KUSMS	NMC	NoMC	Total
Gender	Male	12	27	13	20	27	15	114(14.8%)
	Female	46	151	104	135	166	53	655(85.2%)
Level of study	Basic Science	26	99	68	80	114	21	408(53.1%)
	Clinical Science	32	79	49	75	79	47	361(46.9%)
Total		58(7.5%)	178(23.1%)	117(15.2%)	155(20.2%)	193(25.1%)	68(8.8%)	769

Note: Basic Science: 1st-2nd year; Clinical Science: 3rd-5th year

Table 2: Descriptive statistics on factual details of online class

Questions	Responses			
No of online classes attended per week during COVID-19 lockdown	1-6	7-12	13– 18	>18
	173(22.5%)	257(33.4%)	289(37.6%)	50(6.5%)
No of hours spend/day using book/PC for education other than online class	<1	1-3	3-6	>6
	765(99.5%)	4(0.5%)	-	-
No of hours spend/day using social site or TV for entertainment	<1	1-3	3-6	>6
	43(5.6%)	338(44%)	264(34.3%)	124(16.1%)
Device used for internet	Laptop	Desktop PC	Smartphone	Tablet
	292(38%)	2(0.3%)	442(57.5%)	33(4.3%)
Connection for seeking online class	Wifi	Landline internet	Cellular data	Others
	623(81%)	44(5.7%)	102(13.3%)	-
Medium used for online class	Zoom	Viber	Skype	Others
	663(86.2%)	1(0.1%)	1(0.1%)	104(13.5%)
Modality of online class	MS PowerPoint	MS word	Tutorial class	Other
	710(92.3%)	13(1.7%)	21(2.7%)	25(3.3%)
Condition of internet connection	Good	Satisfactory	Bad	Disturbed electricity
	99(12.9%)	313(40.7%)	107(13.9%)	250(32.5%)

Table 3: Dichotomous perceptional response of respondent on online class

Questions	Yes	No
Online classes attended before Covid-19 pandemic	83(10.8%)	686(89.2%)
Able to access internet easily	529(68.8)	240(31.2)
Internet class causing economic burden	164(21.3%)	605(78.7%)
Online class environment is distracting	591(76.9%)	178(23.1%)

Table 4: Perceptional response of all respondents

Questions	Strongly Agree	Agree	Disagree	Strongly Disagree
Able to submit assignment	78(10.1%)	506(65.8%)	158(20.5%)	27(3.5%)
Can ask questions, communicate & receive response	192(25%)	540(70.2%)	31(4%)	6(0.8%)
Practical/ clinical simulation exercise through online class	8(1%)	22(2.9%)	286(37.2%)	453(58.9%)
Possible to perform class test	12(1.6%)	133(17.3%)	358(46.6%)	266(34.6%)
Training required for faculty	121(15.7%)	481(62.5%)	163(21.2%)	4(0.5%)

Table 5: Level wise dichotomous perceptional differences on online class

Questions	Response	Basic Sciences (n=408)	Clinical Sciences (n=361)	p-value
Able to submit assignment	Agree	323 (55.3%)	261(44.7%)	0.026*
	Disagree	85(45.9%)	100(54.1%)	
Can ask questions, communicate & receive response	Agree	389(53.1%)	343(46.9%)	0.831
	Disagree	19(51.4%)	18(48.6%)	
Practical/ clinical simulation exercise through online class.	Agree	8(26.7%)	22(73.3%)	0.003*
	Disagree	400(54.1%)	339(45.9%)	
Possible to perform class test	Agree	69(47.6%)	76(52.4%)	0.143
	Disagree	339(54.3%)	285(45.7%)	
Training required for faculty	Agree	306(50.8%)	296(49.2%)	0.019*
	Disagree	102(61.1%)	65(38.9%)	

*Statistically Significant

Table 6: College-wise factual differences on online class

Question	Name of the College							
	Distribution	COMS	KDCH	KMC	KUSMS	NMC	NoMC	Total
		n=58	n=178	n=117	n=155	n=193	n=68	n=769
No of online classes attended /week	1-6	19(32.8%)	88(49.4%)	24(20.5%)	26(16.8%)	13(6.7%)	3(4.4%)	173(22.5%)
	7-12	22(37.9%)	23(12.9%)	42(35.9%)	62(40%)	70(36.3%)	38(55.9%)	257(33.4%)
	13-18	11(19%)	50(28.1%)	45(38.5%)	62(40%)	97(50.3%)	24(35.3%)	289(37.6%)
	>18	6(10.3%)	17(9.6%)	6(5.1%)	5(3.2%)	13(6.7%)	3(4.4%)	50(6.5%)

No of hours spend / day using book/ PC for education other than online class	<1	58(100%)	174(97.8%)	117(100%)	155(100%)	193(100%)	68(100%)	765(99.5%)
	1-3	-	4(2.2%)	-	-	-	-	4(0.5%)
No of hours spend / day using internet/ TV for entertain-ment	<1	1(1.7%)	8(4.5%)	9(7.7%)	9(5.8%)	10(5.2%)	6(8.8%)	43(5.6%)
	1-3	33(56.9%)	83(46.6%)	54(46.2%)	58(37.4%)	79(40.9%)	31(45.6%)	338(44.0%)
	3-6	20(34.5%)	56(31.5%)	33(28.2%)	63(40.6%)	69(35.8%)	23(33.8%)	264(34.4%)
	>6	4(6.9%)	31(17.4%)	21(17.9%)	25(16.1%)	35(18.1%)	8(11.8%)	124(16.1%)
Device used for internet	Laptop	20(34.5%)	66(37.1%)	46(39.3%)	72(46.5%)	73(37.8%)	15(22.1%)	292(38.1%)
	Desktop PC	-	-	2(1.7%)	-	-	-	2(0.3%)
	Smartphone	36(62.1%)	105(59%)	62(53%)	79(51%)	109(56.5%)	51(75%)	442(57.5%)
	Tablet	2(3.4%)	7(3.9%)	7(6%)	4(2.6%)	11(5.7%)	2(2.9%)	33(4.3%)
Connection for seek-ing online class	Wifi	49(84.5%)	147(82.6%)	103(88%)	133(85.8%)	151(78.2%)	40(58.8%)	623(81%)
	Landline internet	3(5.2%)	12(6.7%)	4(3.4%)	9(5.8%)	11(5.7%)	5(7.4%)	44(5.7%)
	Cellular data	6(10.3%)	19(10.7%)	10(8.5%)	13(8.4%)	31(16.1%)	23(33.8%)	102(13.3%)
Medium used for online class	Zoom	56(96.6%)	178(100%)	117(100%)	154(99.4%)	90(46.6%)	68(100%)	663(86.2%)
	Viber	1(1.7%)	-	-	-	-	-	1(0.1)
	Skype	-	-	-	1(0.6%)	-	-	1(0.1%)
	Others	1(1.7%)	-	-	-	103(53.4%)	-	104(13.5%)
Modality of online class	MS Power-point	45(77.6%)	172(96.6%)	109(93.2%)	147(94.8%)	173(89.6%)	64(94.1%)	710(92.3%)
	MS word	1(1.7%)	2(1.1%)	3(2.6%)	1(0.6%)	6(3.1%)	-	13(1.7%)
	Tutorial class	5(8.6%)	3(1.7%)	5(4.3%)	5(3.2%)	1(0.5%)	2(2.9%)	21(2.7%)
	Other	7(12.1%)	1 (0.6%)	-	2(1.3%)	13(6.7%)	2(2.9%)	25(3.3%)
Condition of internet connection	Good	10(17.2%)	28(15.7%)	12(10.3%)	18(11.6%)	18(9.3%)	13(19.1%)	99(12.9%)
	Satisfactory	27(46.6%)	62(34.8%)	43(36.8%)	68(43.9%)	94(48.7%)	19(27.9%)	313(40.7%)
	Bad	5(8.6%)	25(14%)	15(12.8.2%)	18(11.6%)	30(15.5%)	14(20.6%)	107(13.9%)
	Disturbed electricity	16(27.6%)	63(35.4%)	47(40.2%)	51(32.9%)	51(26.4%)	22(32.4%)	250(32.5%)

Table 7: College-wise perceptional differences on online class

Questions	Name of the College							
	Response	COMS	KDCH	KMC	KUSMS	NMC	NoMC	Total
		58(100%)	178(100%)	117(100%)	155(100%)	193(100%)	68(100%)	769
Able to submit assignment.	Strongly Agree	2(3.4%)	5(2.8%)	14(12%)	25(16.1%)	29(15%)	3(4%)	78(10%)
	Agree	25(43.1%)	112(62.9%)	87(74.4%)	119(76.8%)	137(71%)	26 (38%)	506(66%)
	Disagree	26(44.8%)	53(29.8%)	13 (11.1%)	11(7.1%)	24 (12%)	31 (46%)	158(21%)
	Strongly Disagree	5(8.6%)	8(4.5%)	3(2.6%)	-	3(2%)	8 (12%)	27(4%)
Can ask questions, communicate & receive response.	Strongly Agree	11(19%)	44(24.7%)	37(31.6%)	43(27.7%)	42(22%)	15(22%)	192(25%)
	Agree	40(69%)	127(71.3%)	76 (65%)	110(71%)	144 (75%)	43 (63%)	540(70%)
	Disagree	5(8.6%)	7(3.9%)	4 (3.4%)	2(1.3%)	6(3%)	7(10%)	31(4%)
	Strongly Disagree	2 (3.4%)	-	-	-	1(1%)	3 (4%)	6(1%)
Practical/ clinical simulation exercise through online class.	Strongly Agree	-	2(1.1%)	1(0.9%)	3(1.9%)	1(1%)	1(1%)	8(1%)
	Agree	1(1.7%)	4(2.2%)	7(6.0%)	1(0.6%)	6 (3%)	3(4%)	22(3%)
	Disagree	27(46.6%)	72(40.4%)	40(34.2%)	59(38.1%)	68(35%)	20(29%)	286(37%)
	Strongly Disagree	30(51.7%)	100(56.2%)	69(59%)	92(59.4%)	118(61%)	44(65%)	453(59%)
Possible to perform class test.	Strongly Agree	3(5.2%)	1(0.6%)	4(3.4%)	1(0.6%)	1(1%)	2(3%)	12(2%)
	Agree	16(27.6%)	29(16.3%)	30 (25.6%)	19(12.3%)	32(17%)	7(10%)	133(17%)
	Disagree	23(49.7%)	84(47.2%)	47 (40.2%)	89 (57.4%)	90 (47%)	25 (37%)	358(47%)
	Strongly Disagree	16(27.6%)	64(36%)	36(30.8%)	46(29.7%)	70(36%)	34(50%)	266(35%)
Training required for faculty.	Strongly Agree	8(13.8%)	30(16.9%)	30(25.6%)	15(9.7%)	25(13%)	13(19%)	121(16%)
	Agree	44(75.9%)	112(62.9%)	63(53.8%)	103(66.5%)	115(60%)	44(65%)	481(63%)
	Disagree	6(10.3%)	36(20.2%)	23(19.7%)	36(23.3%)	53(27%)	9(13%)	163(21%)
	Strongly Disagree	-	-	1(0.9%)	1(0.60%)	-	2(3%)	4(1%)

DISCUSSION

In response to school closures caused by COVID-19, United Nations Educational, Scientific and Cultural Organization (UNESCO) recommended the use of distance learning program and open educational applications and platforms that schools and teachers can use to reach learners remotely and limit the disruption of education.[6]

Distance learning uses interactive radio instruction (IRI), interactive audio instruction (IAI), online virtual worlds, digital games, webinars, and webcasts, all of which are referred to as e-Learning.[7] Upoalkpajor JN and Upoalkpajor CB revealed that COVID-19 pandemic has significant impact on education in Ghana.[8]

Among the total respondents, more than 2/3rd of respondent never attended any online classes before. More than 1/3rd of respondents attended 13-18 classes/ day during COVID-19 lockdown. More than 2/3rd of respondents were able to easily access internet as needed for their studies which was in accordance with Subedi et al.[5] Majority respondents spend <1 hour/ day using book or PC for education purpose other than online classes. More than 1/3rd of respondents spend 3-6 hours/day using internet, social site or TV for entertainment.

Poor internet connection was the major reason among the students who were not able to access the internet. Subedi et al concluded that 63.2% of students get disturbed for online class because of electricity problem.[5] Eltahir,[9] Esterhuyse and Scholtz,[10] Islam et al,[11] Al-Azawei et al,[12] Nwabufo et al[13] concluded that lack of technical support was one of the e-learning system failures. Unavailability of technical staff, lack of support of facilities to perform various activities, slow speed of internet and high internet traffic were encountered during online classes.

The students responded via laptop, desktop PC, smartphone and tablet. Majority of the respondents were comfortable and used smart phone for seeking online class which was in accordance with Subedi et al.[5] They also stated that 56.1% have gadgets available at home for the online class. 40% used laptop/ computer. Parajuli KP concluded that mobile learning should be integrated in formal education system.[14] Mobile phone dependence was common among the UG medical students which suggested the need to develop educational program to educate the students to use mobile phone meaningfully.[15] Students were found to be using mobile phone excessively signaling the evolution of mobile phone use from a habit to an addiction.[16]

More than 2/3rd of total respondents used wifi for seeking online classes. Subedi et al stated that 32.9% use internet data pack for their online classes while only 13.3% respondents used cellular data in our study.[5]

Different e-learning data packages has been launched by Nepalese telecom companies like Nepal Telecom and Ncell at an affordable rate regarding which most of the student are not aware of. More than 2/3rd of total respondents experienced that internet class is not posing economic burden on them which could be due to the deduced cost of travelling, lodging and fooding. Although it seems feasible for majority of students from urban cities and well-to-do families, students from adverse families are affected.[17] Students bear out of pocket expenditure for expensive data packages imposing added financial burden as[13-18] classes were being taken per week during COVID-19 lockdown.

Internet connection experienced by the respondents was satisfactory for 1/3rd of the total respondents. Subedi et al concluded that 63.6% of students get disturbed for online class because of internet problem whereas 63.2% gets disturbed for online class because of electricity problem.[5] The geographical remoteness further hinders the network coverage across the country.[17]

The medium used for online classes was via Zoom, Viber, skype and others. More than 2/3rd of total participants agreed that training is required for faculty/ instructor in order to conduct online classes. Out of the total respondents, 32.5% experienced weak internet due to disturbed electricity problem. Statistically significant differences were seen among the basic and clinical science students who were able to submit assignment, perform practical/ clinical simulation exercise through online classes and if training was required for faculty.

Parajuli KP[14] concluded that mobile learning should be integrated in formal education system. Subedi et al[5] concluded that e-learning is a good opportunity to continue education but in developing countries like

Nepal it is not fully effective unless the factors affecting the E-learning process are taken into account. Owusu-Fordjour C et al[18] recommended that students should be introduced to innovative and offline e-learning platforms to supplement classroom teaching.

More than half of total respondents disagreed that online classes are more effective which was in accordance with Owusu-Fordjour C et al.[18] J Sandars, S Schroter concluded that there is high awareness of new online technologies by both medical students and practitioners and high interest in its use for medical education. However, the potential of new technologies for UG and PG medical education can be achieved if there is increased training in how to use the new approach.[19]

C0VID-19 pandemic have serious impacts on students' learning and well-being. Nepal has formulated a number of Information and communications technology (ICT) and education related policies since 2000; faulty implementation strategies and inability to implement those policies are the main challenges being experienced.[20] Online teaching is feasible, cheap and must be made a part of the postgraduate training in India beyond the prevailing lockdown.[21]

CONCLUSION

Online class has been a reality since COVID-19 pandemic and served as an alternative educational tool. It paves a new pathway for mass as well as personalized education. With more practice, system upgrading, capacity building of the student-teacher; it is bound to be more effective as well as efficient. However, few significant issues encountered are transactional distance, lack of direct communication, domestic distraction, technological difficulties and practical barriers like poor internet connection and disturbed electricity problem and expensive data package for the students.

The online class should be designed in such a way that student can focus and find it more interesting and should introduce various strategies to increase the interaction between students and teachers. Further, training on online class is required for both recipients and course providers.

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