ORIGINAL RESEARCH ARTICLE

PERCEPTION OF UNDERGRADUATE DENTAL STUDENTS TOWARDS VIRTUAL LEARNING AND CLASSROOM LEARNING

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ABSTRACT

Background: World Health Organization (WHO) declared Coronavirus disease (COVID-19) a public health emergency and global pandemic on March 11, 2020. This outbreak has led to a complete lockdown and has changed the educational delivery system across the world from traditional classroom learning (CL) to virtual learning (VL). This study was conducted to assess the perception of dental students towards virtual and classroom learning.

Methods: A cross-sectional study was done among undergraduate dental students from the first year to the final year over a period of February 2021 to April 2021.A self-administered questionnaire was used for data collection. The results were analysed for descriptive statistics using the Statistical Package for the Social Sciences (SPSS) 20 software.

Results: Of the 143 total participants, "learning at their own pace was the main advantage of VL 97(67.8%). A majority reported that CL was either effective 68(47.7%) or extremely effective 28(19.6%) for increasing knowledge, while only 31(21.7%) and 2(1.4%) agreed that VL was effective, and extremely effective respectively. For preclinical, clinical, and social skills, more students believed that CL was effective compared to VL (48.3% vs 3.2%, 50% vs 6.1%, and 48.9% vs 0% respectively). Nearly half of the participants 68(47.6%) had neutral responses towards the incorporation of VL in the undergraduate curriculum.

Conclusions: The majority of the students preferred classroom learning compared to virtual learning and only nearly half of the students have a neutral response toward acceptance of virtual learning.

INTRODUCTION

COVID-19 is an acute highly infectious disease primarily involving the respiratory system caused by corona virus SARS-CoV-2.[1] It was first reported in Wuhan, Hubei province of China, in December 2019.The World Health Organization (WHO) declared COVID-19 a public health emergency and global pandemic on March 11, 2020.[2]The government of Nepal also declared a nationwide shutdown on 24 March 2020in order to combat this global pandemic.

This outbreak has changed the educational delivery system across the world from traditional classroom learning to virtual learning. Most Universities across the World including Nepal, instructed their affiliated medical and dental schools to start virtual classes for their undergraduates without any proper preparation and planning, though virtual classes were a totally new teaching/learning methodology and are least emphasized in our educational system so far.

Similar situations are inevitable in the future. The experience learnt can be future guidance.[3] So, this study was conducted to study the perception of dental students towards virtual and classroom learning.

METHODS

A cross-sectional study was carried out in the Dental College of KIST medical college and Teaching Hospital, Lalitpur Nepal. Ethical approval for the study was obtained from the Institutional Review Committee of KISTMCTH (Ref no 2077/78/51). Census sampling was carried out. All students from the first year to the final year were included in the study.

A questionnaire was prepared by a meticulous review of the literature of previous articles [4, 5] and a few questions were added that were relevant to our context. The questionnaire was assessed for its validity by an expert and pretested among 10% (15) of the total sample. After gaining informed consent, a questionnaire was distributed among 152 undergraduate dental students from the first year to the final year. A total of 143 completed questionnaires were included in the study,

making the response rate 94.07%. The questionnaire consisted of four sections and 19 questions. The first section included basic demographic, IT skills and experience in virtual learning. The second section included the advantages and disadvantages of virtual and classroom learning. The third part included a comparison between virtual learning and learning in physical presence using Likert's 5 scale (where 1 is extremely ineffective and 5 is extremely effective). The last part explored their acceptance and agreement with the incorporation of virtual learning in an undergraduate curriculum. Data collection was carried out from February 2021 to April 2021 and entered in Microsoft Excel, and descriptive analysis was carried out using the Statistical Package for the Social Sciences version 20.

RESULTS

A total of 143 students were involved in the study. Out of 143 participants, 125(87.4%) were female and 18(12.6%) were male. The age of the student ranged from 18 to 35 years with a mean age of 26.5 years. Among total respondents, 61(42.7%) were in preclinical years and 82(57.4%) were in clinical years. Of the total respondents, 8(5.6%) categorized their IT skills as high, 109(76.2%) as moderate and 26(8.2%) as low. Only 12(8.4%) of the respondents had experience with previous virtual learning before the pandemic (Table 1.)

Table 1: Demographic data of the study population

Variable	N (%)
Gender	
Male	18 (12.6%)
Female	125 (87.4%)
Total	**143 (100%)**
Year of Study	
1st year	18 (12.6%)
2nd year	43 (30.1%)
3rd year	19 (13.3%)
4th year	30 (21%)
5th year	33 (23.1%)
Total	**143 (100%)**
IT Skill	
High	8 (5.6%)
Moderate	109 (76.2%)
Low	26 (18.2%)
Total	**143 (100%)**
Experience of VL before the pandemic	
Yes	12 (8.4%)
No	131 (91.6%)
Total	**143 (100%)**

'Learning at your own pace' was the highest responded advantage of VL 97(67.8%) followed by the ability to stay at home 86(60.1%), easy access to online material 82 (57.3%), the ability to record the meeting 80(55.9%) and a comfortable environment 64 (44%), respectively. The technical problem was the major disadvantage 136(95.15%) of VL followed by lack of interaction with patients 91(63.6%), reduced interaction with the teacher 86(60.1%), disturbances of family members

71(49.7%), lack of self-discipline 53(37.1), social isolation 46(32.2%) and lack of teacher competencies 37(25.9%) (Table 2).

Table 2: Advantages and disadvantages of virtual learning

Variables	N (%)
Advantages of VL*	
Easy access to online material	82 (57.3%)
Learning at your own pace	97 (67.8%)
Ability to stay at home	86 (60.1%)
Ability to record the meeting	80 (55.9%)
Comfortable surrounding	64 (44.8%)
Disadvantage of VL*	
Reduced interaction with the teacher	86 (60.1%)
Technical problem	136 (95.1%)
Lack of interaction with patients	91 (63.6%)
Poor learning conditions at home	44 (30.8)
lack of self-discipline	53 (37.1)
Social isolation	46 (32.2%)
Lack of teacher competencies	37 (25.9%)
Disturbances from family members	71 (49.7%)

*multiple responses

In terms of imparting knowledge, most of the students had neutral responses 80 (55.9%) for VL while around half of the students 68(47.7%) thought that CL was effective. For the evaluation of preclinical skills, only first and second-year students took part. The total numbers of participants were 62(43.4%). The participants responded that for preclinical skill, CL was more effective 30(48.3%) vs 2(3.2%) or extremely effective 21(34%) vs 0% compared to VL. For the evaluation of clinical skills and social skills, only the third year, fourth year and final year took part in the survey. The total numbers of students were 82(57.3%). Out of these, more than 80% of the student confirmed that VL is either ineffective or extremely ineffective for clinical skills as well as social skills. Out of 143 students, active participation was more during CL 87(60.9%) compared to VL 57(39.9%).

Table 3: Comparison between virtual learning and classroom learning in terms of knowledge, preclinical skill, clinical skill and dealing with patient

Variables	VL (N, %)	Classroom learning (N %)
Knowledge		
extremely ineffective	4 (2.8%)	0(0%)
Ineffective	26 (18.2%)	1(0.7%)
Neutral	80 (55.9%)	46((32%)
Effective	31 (21.7%)	68(47.7%)
Extremely effective	2 (1.4%)	28(19.6%)
Total	**143(100%)**	**143(100%)**
Preclinical skill (1&2 year)		
Extremely ineffective	21 (34%)	0(0%)
Ineffective	27 (43.5%)	0(0%)

Neutral	12 (19.3%)	11(17.7%)
Effective	2 (3.2%)	30(48.3%)
extremely effective	0(0%)	21(34%)
Total	**62(100%)**	**62(100%)**
Clinical skill (3&4 year)		
Extremely ineffective	38(46.4%)	1(1.2%)
Ineffective	28 (34.1%)	1 (1.2%)
Neutral	11 (13.4%)	12 (14.6%)
Effective	5(6.1%)	41 (50%)
extremely effective	0(0%)	27 (33%)
Total	**82(100%)**	**82(100%)**
Social skills (3&4 year)		
Extremely ineffective	43(52.4%)	0
Ineffective	29(35.4%)	1(1.2%)
Neutral	10(12.2%)	13(15.8%)
Effective	0	40(48.9%)
Extremely effective	0	28(34.1%)
Total	**82(100%)**	**82(100%)**
Participation of student		
Extremely inactive	8 (5.6%)	3 (2.1%)
Inactive	25 (17.5%)	7 (4.9%)
Neutral	53 (37.1%)	46 (32.2%)
Active	54 (37.8%)	65 (45.5%)
Extremely active	3 (2.1%)	22 (15.4%)
Total	**143(100%)**	**143(100%)**

Regarding the acceptance of VL, only 50(35%) had enjoyed the virtual classes, and 68 (46.7%) of the participants have a neutral response. Approximately half of the students 68 (46.7%) had a neutral response regarding the incorporation of VL into the undergraduate curriculum while only 23(16.1%) of the respondents agreed with the incorporation of virtual learning in the undergraduate curriculum (Table 4).

Table 4: Acceptance of virtual learning

Variable	N (%)
Extremely unenjoyable	5 (3.5%)
Unenjoyable	17 (11.9%)
Neutral	68 (47.6%)
Enjoyable	50 (35%)
extremely enjoyable	3 (2.1%)
Total	**143(100%)**
Incorporation of Virtual Learning in the Undergraduate curriculum	
Extremely disagree	17 (11.9%)
Disagree	35 (24.5%)
Neutral	68 (47.6%)
Agree	20 (14.0%)
Extremely agree	3 (2.1%)
Total	**143(100%)**

DISCUSSION

There was a paradigm shift in teaching/learning methodology from traditional classroom learning to virtual learning, especially after the COVID-19 pandemic.[6]This transition in learning pedagogy was a different experience for both the teachers and the learners.[7] Therefore, this study was conducted to assess the perception and experience of undergraduate dental students towards virtual learning at KISTMCTH, Imadole, Kathmandu.

In this study, majority of the students reported of having moderate level of IT skills 109(76.2%). Most of them 97(67.8%) reported "learning at your own pace" was the main advantage of VL, which was followed by ability to stay at home 86(60.1%), easy access to online material 82(57.3%), ability to record meeting 80(55.9%) and comfortable surrounding 64(44.8%) respectively. The major disadvantages of VL in this study showed technical problem 136(95.1%) and lack of interaction with patients 91(63.6) and teachers (60.1%) which is consistent with the results of the study conducted on Polish medical student.[4] and on undergraduate medical students of Eastern India.[8] The major disadvantage of technical problem during online study could be because the technology was relatively newer at the time of data collection and has advanced tremendously within these two years. Meanwhile, most of the students categorized themselves as moderate level in IT skill which is a hopeful information, as it opens the door to incorporate the VL into dental curriculum with relative ease. The lack of interaction with the patient was the major issues with those who were in clinical years. Learning from the real patient is crucial for the dental education for those who are in clinical years, this cannot be fully replaced with the virtual learning.[9] However, to some extent, a solution to this issue could be the use of virtual patients (VPs). VPs are designed to simulate real-life clinical scenarios and they enable the learner to prepare him/herself before a real patient encounter.[10]

While comparing the virtual learning and class room learning in terms of knowledge, preclinical skills, clinical skill and social skills, present study showed that, around half of the respondents (55.9%) had neutral response towards virtual learning for enhancing the knowledge. This suggested that the method was newer to the students, therefore majority of them neither rejected it or accepted it. A study conducted among Polish medical students reported that virtual learning was equally as effective as class room learning in terms of increasing the knowledge.[4] More than half of the students 96(67.3%) agreed that class room learning is the effective method to increase the knowledge. This result is consistent with the results of the study conducted in Jamia Millia Islamia.[11] The reason could be in countries, such as India, Pakistan, Nepal, and Sri Lanka, online learning was not a regular part of the teaching curriculum in dental colleges, and it was quickly adopted given the pandemic's rapid progression and its subsequent social distancing mandates.[5,12–14]

For the assessment of the preclinical skills, only first-year and second-year students were included. Total numbers of the students were 62. Out of these, 48(77.5%) concluded that VL is ineffective for increasing the preclinical skill, while 51 (82.3%) agreed that class learning is effective pedagogical method to increase the preclinical skill as well which is similar with the

result of the study conducted at Saudi University.[15]

For the assessment of clinical and social skill, only third year, fourth year, and final-year student took part in the survey. The total numbers of the students were 82. When we combined the extremely ineffective and ineffective category into an ineffective category, 66(80.5%) of the respondents confirmed that VL is ineffective for clinical skill and 72(87.8%) reported it was ineffective for building the social skill as well which is similar with the result of the study conducted in West Indian dental school.[16] while the opposite is true for class room learning. A total of 68(83%) respondents accepted that class room learning is either extremely effective or effective for enhancing clinical as well as social skill.

While comparing the participation of the students during virtual learning and class room learning, our study showed that, only 57(39.9%) were active during the online learning. The reason could be lack of interactive approach with teacher, friends, and patient in virtual learning. This is similar with the results of the study conducted in USA and Australia. [17, 18, 19] In contrast to the virtual learning, 87(60.9%) of the participant were active during the Class room learning.

Regarding the acceptance of virtual learning for undergraduate dental students, nearly half of the participants 68(47.6%) had neutral response for the enjoyment of VL. However, more than a third 50(35%) of the students enjoyed the VL classes. The higher neutral response is suggestive of indecisiveness among the students, which could be because of the incorporation of newer methodology in teaching curriculum. Provided with better technology, trained teaching staffs, the acceptance towards VL can increase in future, and is a subject of further exploration. When asking about the incorporation of the VL

in dental curriculum, again majority of the students were neutral (47.6%). However, more students did not agree for the incorporation. Previous studies reported, that majority of the students preferred hybrid learning over virtual learning or class room learning.[15, 20] So in order to make the VL accepted by the undergraduate students, it should be designed in such a way that students can focus and find it more interesting and should introduce various strategies to increase the interaction between students and teachers. Further, training on virtual learning is required for both learner and facilitator.

Study findings were based on students' self-reported data, and the quality depends on students' faithful responses.

CONCLUSION

Our findings indicate that the majority of the students preferred classroom learning compared to virtual learning. Most of the students find technical problems and less interactive sessions with virtual learning. Thus, this study provides evidence that students have a neutral response towards virtual learning and have accepted it only partially. Since many students had moderate IT knowledge, with improved technology and well-trained interactive facilitator VL can be incorporated into the dental curriculum.

ACKNOWLEDGEMENT

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