

Attitude Towards Online Education During Covid-19 Pandemic Among Bachelor Level Students of Jumla

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ABSTRACT

Background: Health science students, since long time, have been using digital technology mainly for the research purposes only. Due to global spread of corona virus disease (COVID-19), education system has changed and adopted online education which was a solution for the continuity of teaching and learning process during COVID-19 pandemic. The main objective of this study was to assess the attitude towards online education among bachelor level health science students.

Methods: A descriptive cross-sectional study was carried out at Karnali Academy of Health Sciences, Jumla. Complete enumeration was done. Total 68 bachelor level students were taken for the study. A pretested self administered questionnaire was used for data collection. Data were entered and analyzed by using SPSS version 16. Frequency and percentage were also computed for demographics variables. Chi-square test was applied to assess the association between socio-demographic variables and attitude level.

Results: The study illustrated that, among the 68 bachelor level students, nearly two third (63.2%) students had negative attitude towards online education during COVID-19 pandemic. There was statistically significant association of attitude level with ethnicity, type of program and strength of internet connection ($p \leq 0.05$).

Conclusion: Majority of students of Karnali Academy had negative attitude towards online education; and they had faced many difficulties like internet and electricity problem etc. Administration and faculty members should take necessary measures for improving online education.

Keywords: Barriers, Covid-19, Effectiveness, Internet, Online education, Students, Stressor

INTRODUCTION

COVID-19 pandemic has affected people's physical health as well as lifestyles, businesses, the stock market, and even the global educational system because containment attempts were made to try to stop it.^{1,2,3} Universities and other institutions were being forced by the COVID-19 pandemic to quickly transition to online and distance learning.⁴ Tribhuvan University (TU) also officially endorsed the virtual class model along with a guideline and circulated a notice among its institutions. Similarly, the Ministry of Education and of Science, and Technology appealed to stakeholders to start classes through alternative systems. Various media outlets and relevant stakeholders argued for the need to promote such classes.⁵ Therefore, a number of medical schools have been attempting to adopt cutting-edge technology enabled online learning as their

primary mode of instruction.^{6,7}

Online education has advantages such as being convenient, cheap, and feasible.⁸ Flexibility, accessibility, contentment, and cost-effectiveness are the general features of e-learning.^{9,10,11} On the other hand, there are also some drawbacks to such online class, such as respondents' low digital literacy. Particularly for students who struggle with self-discipline, some advantages, like time flexibility, can also be limitations.¹²⁻¹⁵ In a developing country, there are economic, educational, and technological barriers that could impair the effectiveness of online education.¹⁶ However, similar research carried out in several nations revealed that students had positive attitude toward online learning.¹⁷ In our context, the practice of online classes is new to many colleges. Access to a reliable electricity and internet service is also scarce in many parts

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of the country. This new model of learning, while beneficial and adequate, may require changes and adaptations from both the students and teachers, to ensure successful learning and participation, without being physically present in the classroom. So, this study was carried out to access attitude towards online education during COVID-19 pandemic among bachelor level students of Karnali Academy of Health Sciences.

MATERIALS AND METHODS

The study design was descriptive, cross-sectional research design which was conducted among bachelor health students studying at Karnali Academy of Health Sciences (KAHS) which is located in Karnali Province of Nepal. This setting was purposively selected for the study purpose because KAHS has been providing education facilities to students of different streams like BMS, MBBS, BNS, BPH, B Pharmacy, MD/MS. All bachelor level students studying at this college who had taken online classes were target population of this study which was chosen by using complete enumeration. Total numbers of bachelor level student were 76. Those students who were sick and unable to respond and were unwilling to participate were excluded from the study. Ethical approval was obtained from Institutional Review committee (IRC) of Karnali Academy of Health Sciences (Ref no: 078/079/07). Informed verbal and written consent were taken from each student before data collection after giving information about the nature of the study.

A self-administered semi-structured questionnaire was developed through extensive review of related literature. Data was collected by making the students fill the questionnaire at the time of collecting data. The questionnaire consisted of socio-demographic variables and questions to measure attitude. Attitude was measured under four categories i.e. perception to adopt online classes, effectiveness, barriers and stressors regarding online education. It included forty five statements using 5 point Likert scale (Strongly disagree:1 to Strongly agree:5). The questionnaire consisted of 45 items. It also included 26 negative items which were calculated via reverse scoring. The total score range from 45 to 225. The level of attitude was calculated by using cut-off score of 135 and attitude was categorized as positive for score above 135 and negative for score equal to or below 135. Pretesting was done among 10% of the sample size among bachelor students of different colleges.

Students' dignity was maintained by giving right to reject or discontinue their participation from the study at any time without any penalty. Confidentiality and anonymity was maintained by not disclosing the name and other information of the respondent except its use in the study. The form was rechecked for completeness and consistency before entering in and analyzing by SPSS version 16. Percentage and association was done for analysis with 95% level of significance.

RESULTS

Among the participated 68 students, nearly half (45.6%) were of age group 25-29 years. Nearly two third of them were female (60.3%). Majority (70.6%) belonged to Brahman and Chhetri caste. Likewise, most (82.4%) of students were from same municipality. More than half (57.4%) of students were unmarried. The highest proportions (25%)

of the students were from Bachelor of Public Health (BPH) 3rd year. Nearly half (47.1%) of students used mobile phone for online course. More than one third (41.2%) were using mobile data for online classes which had limited access. While, (61.8%) of students were previously involved in online classes before COVID-19, majority (73.5%) of students were not currently involved in any other online courses. More than one third (38.2%) of students spent 3-4 hours for study purpose in a day.

Perception to adopt online education

More than one third (35.3%) of students disagreed that online education made their learning more interesting. While, more than half (57.4%) of students said that online education saved their time. Likewise, nearly half of students agreed that it was helpful in learning process and in solving many educational problems (i.e. 47.1% and 42.6% respectively). More than one third students (36.6%) felt that online education might replace the conventional teaching and learning. Likewise, nearly one third of students were against applying the online learning in medical education system. The same proportion also believed it would reduce the confidence of students. Lastly, more than half of students agreed that online education reduced the teacher-student interaction than in class room teaching. (Table 1)

Effectiveness of online education

Nearly half of students expressed their positive effect in organizing their work on time and their time economy by the online classes. But similar number of them also felt that the interaction between teacher and student was weak. Furthermore, only about a third (36.8%) of students said that they had good internet connection in their home/ hostel. While, more than one third (35.3%) of students did not enjoy taking class form home online than form school. More than half (54.4%) of students felt the teachers adequately addressed their questions or queries during online sessions. (Table 2)

Nearly half of students were disturbed in online classes due to power cutoff and limited technology experience. Likewise, (38.2%) found difficulty in learning online course using internet. Similarly, half of them felt difficulty in expressing their thoughts/feeling through online learning. Furthermore, nearly half (44.1%) strongly agreed that it was expensive to buy data for online learning. Nearly half of students agreed that online education materials are too challenging and they faced lack of instructions. (Table 3)

More than one third (35.3%) of students agreed that they felt anxious about their ability to use online learning effectively. In similar manner, nearly half (48.5%) of students agreed that slow internet connections stress them. Furthermore, nearly half of students agreed that they felt they were suffering from eye problem/ headache and having back pain due to continuous sitting on same position during online education respectively i.e. 44.1% & 47.1%. (Table 4)

Nearly two third (63.2%) of students had negative attitude and more than one third (36.8%) of students had positive attitude towards online education. (Table 5)

There is statistically significant association of attitude towards online education with ethnicity (p-value 0.010), type of program (p=0.041) and strength of internet connection (p=0.011). Study reveals that following group of students had better attitude in online education system: advantage group ethnicity, public health course and those having

Table 1: Perception to adopt online education (n=68)

S.N	Statements	Strongly Dis-agree	Disagree	Neutral	Agree	Strongly Agree
1	Makes learning more interesting	3 (4.4)	24 (35.3)	27(39.7)	12 (17.6)	2 (2.9)
2	Saves time	0	14 (20.6)	7 (10.3)	39 (57.4)	8 (11.8)
3	Helpful in learning process	5 (7.4)	12 (17.6)	15(22.1)	32 (47.1)	4 (5.9)
4	Never replace other forms of teaching and learning methods	6 (8.8)	25 (36.8)	11(16.2)	18 (26.2)	8 (11.8)
5	Preparation and use of technology for online education is time consuming	1 (1.5)	19 (27.9)	12(17.6)	28 (41.2)	8 (11.8)
6	Dislike the idea of using online education tools	8 (11.8)	25 (36.8)	17(25.0)	15 (22.1)	3 (4.4)
7	Had better information sources than online education	6 (8.8)	25 (36.8)	22(32.4)	12 (17.6)	3 (4.4)
8	Solve many of the educational problems	4 (5.9)	17 (25.0)	16(23.5)	29 (42.6)	2 (2.9)
9	Not applicable for medical education	6 (8.8)	22 (32.4)	13(19.1)	22 (32.4)	5 (7.4)
10	Helps to reinforce my knowledge	2 (2.9)	14 (20.6)	17(25.0)	35 (51.5)	0
11	Makes me uncomfortable because I don't understand subject in online classes	6 (8.8)	32 (47.1)	12(17.6)	14 (20.6)	4 (5.9)
12	Not in favor of online education as it leads to social isolation	5 (7.4)	30 (44.1)	6 (8.8)	20 (29.4)	7 (10.3)
13	Reduce the confidence of students	5 (7.4)	21 (30.9)	14 (20.6)	23 (33.8)	5 (7.4)
14	More flexible than classroom teaching	7 (10.3)	29 (42.6)	6 (8.8)	21 (30.9)	5 (7.4)
15	Reduce teacher and students interaction than class room teaching	2 (2.9)	9 (13.2)	2 (2.9)	34 (50.0)	21 (30.9)

Table 2: Effectiveness of online education (n=68)

S.N	Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	Helps me to organize my work on time	2 (2.9)	18 (26.5)	12 (17.6)	33 (48.5)	3 (4.4)
2.	Economic in terms of time for students and teachers	3 (4.4)	12 (17.6)	17 (25.0)	32 (47.1)	4 (5.9)
3.	Students and teacher interaction is weak through online education	0	5 (7.4)	11 (16.2)	33 (48.5)	19 (27.9)
4.	Ensure the effectiveness for presenting the work in class	5 (7.4)	25 (36.8)	15 (22.1)	22 (32.4)	1 (1.5)
5.	Offer maximum engagement of students	7 (10.3)	29 (42.6)	7 (10.3)	22 (32.4)	3 (4.4)
6.	Have a good internet connection in my home/ hostel	14 (20.6)	19 (27.9)	5 (7.4)	25 (36.8)	5 (7.4)
7.	At the same time, I can involve in online class as well as take care of my family which makes me happy	0	16 (23.5)	10 (14.7)	32 (47.1)	10 (14.7)
8.	Enjoy taking class from home than from school.	16 (23.5)	10 (14.7)	32 (47.1)	10 (14.7)	
9.	Get notes/lecture materials from teachers even when I am not able to join my online class	5 (7.4)	24 (35.3)	8 (11.8)	18 (26.5)	13 (19.1)
10.	Feel my teachers are well qualified to take online classes	4 (5.9)	9 (13.2)	6 (8.8)	33 (48.5)	16 (23.5)
11.	Teachers give useful feedback of my online assignments at proper time.	4 (5.9)	10 (14.7)	14 (20.6)	35 (51.5)	5 (7.4)
12.	Teachers adequately address my questions/queries during online class	6 (8.8)	15 (22.1)	19 (27.9)	23 (33.8)	5 (7.4)
13.	Feel uncomfortable to actively communicate with my classmates and instructors during online classes	3 (4.4)	16 (23.5)	9 (13.2)	37 (54.4)	3 (4.4)
14.	I ask questions to my teacher and I receive a quick response	4 (5.9)	29 (42.6)	11 (16.2)	20 (29.4)	4 (5.9)
15.	Quality of teaching and learning can be increased through online education because it integrates various types of media	7 (10.3)	19 (27.9)	16 (23.5)	26 (38.2)	0

Table 3: Barriers of online education(n=68)

S.N	Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	Get disturbed for my online class because of electricity problem	7 (10.3)	11 (16.2)	2 (2.9)	28 (41.2)	20 (29.4)
2.	Find it difficult to learn the course using the internet	5 (7.4)	18 (26.5)	10 (14.7)	26 (38.2)	9 (13.2)
3.	Difficult to express my thoughts/ feeling through online learning	3 (4.4)	20 (29.4)	8 (11.8)	34 (50.0)	3 (4.4)
4.	Expensive to buy data daily for online learning.	4 (5.9)	6 (8.8)	4 (5.9)	24 (35.3)	30 (44.1)
5.	Working with computer makes me nervous	8 (11.8)	35 (51.5)	9 (13.2)	14 (20.6)	2 (2.9)
6.	Limited technology experience	5 (7.4)	11 (16.2)	16 (23.5)	32 (47.1)	4 (5.9)
7.	Lack of past experience on using online tools	5 (7.4)	16 (23.5)	4 (5.9)	35 (51.5)	8 (11.8)
8.	Online education materials are too challenging	6 (8.8)	14 (20.6)	10 (14.7)	30 (44.1)	8 (11.8)
9.	Lack of instructions	1 (1.5)	21 (30.9)	10 (14.7)	32 (47.1)	4 (5.9)

Table 4: Stressor regarding online education (n=68)

S.N	Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	Feel anxious about my ability to use e learning effectively.	6 (8.8)	24 (35.3)	13 (19.1)	24 (35.3)	1 (1.5)
2.	Slow internet connections stress me.	4 (5.9)	4 (5.9)	3 (4.4)	33 (48.5)	24 (35.3)
3.	Feel pressurized by my teachers to use online education for learning activities.	9 (13.2)	28 (41.2)	14 (20.6)	12 (17.6)	5 (7.4)
4.	Computers scare me.	16 (23.5)	30 (44.1)	10 (14.7)	8 (11.8)	4 (5.9)
5.	Suffering from eye problem or headache because of my online education.	3 (4.4)	11 (16.2)	8 (11.8)	30 (44.1)	16 (23.5)
6.	Back pain continuously sitting at same positing during online education	4 (5.9)	10 (14.7)	9 (13.2)	32 (47.1)	13 (19.1)

Table 5: Attitude towards online education (n=68)

Attitude	Frequency	Percent
Negative attitude	43	63.2
Positive attitude	25	36.8

better internet connection. The attitude did not differ with the age, sex, marital status, type of device used, previous experience of or current involvement in online course and duration (hours per day) of study (Table 6).

DISCUSSION

The present study showed that nearly two third of the students had a negative attitude towards online education. A similar study conducted at a Nobel Medical College in Biratnagar, Nepal among 117 nursing students also showed that half of the students had a negative attitude regarding online classes.¹⁹ Likewise, study conducted at Liaquat College of Medicine and Dentistry in Pakistan among 377 MBBS and BDS students illustrated that majority (77%) of students have negative perceptions towards e-learning.²⁰ The study reveals that there is statistically significant association of attitude with ethnicity, type of program and strength of internet connection. Similarly, the study done in Nepal found a statistically significant association of perception with type of nursing programme,²¹ & enrolled nursing program.¹⁹ Whereas, there is no significant association between the students’ attitude and their age, residence, type of gadget used and hours spend per day. This study found that out of 68 students, nearly half of

them used mobile gadgets for their online education. A Pakistani study showed that 76% of medical students them used mobile gadgets for their e-learning.²⁰ Similarly, the study is in line with another study of Gandaki Medical College among 133 nursing students which showed that mobile was the most commonly (51.9%) used gadget for attending online class.²¹ In this study, more than half (57.4%) of students agreed that online learning system saved time. This finding is supported by the study conducted at Gandaki Medical College of Nepal among 133 nursing students display that nearly half (46.6%) of students managed their study time easily for online sessions.²¹ In contrast, a study conducted at North Batinah region of Oman among 120 nursing students found that just more than one third (38.9%) of students said the online education saved their time.²²

The present study demonstrated that about 40% students agreed that preparation and use of technology for online education is time consuming. However, more than half (52.6%) disagreed to no specific preparation is needed to attend online classes.²⁰ A study conducted among students of Indonesia also showed that nearly half (42.4%) of students disagreed that no specific preparation was needed for long distance learning.²³

In our study, only few students (2.9%) agreed strongly that online education solves many of educational problems which is similar to the finding of Nobel Medical College nursing students (3.4%).¹⁹ However, the finding is contrast with the North Batinah study where nearly half (47.1%) of students felt that online learning solves educational problems.²² Similarly, nearly one third (32.4%) of our

Table 6: Association between socio-demographic variables and attitude towards online education (n=68)

Variables	Negative Attitude	Positive Attitude towards online education N (%)	Chi-square value	p-value
Completed age				
20-24	19 (65.5%)	10 (34.5%)	0.113	0.736
25 and above	24 (61.5%)	15 (38.5%)		
Sex				
Male	16 (59.3%)	11 (40.7%)	0.305	0.581
Female	27 (65.9%)	14 (34.1%)		
Ethnicity				
Dalit and disadvantage group	13 (92.9%)	1 (7.1%)	6.654	0.010*
Braham, Chhetri, Thakuri	30 (55.6%)	24 (44.4%)		
Martial status				
Unmarried	24 (61.5%)	15 (38.5%)	0.113	0.736
Married	19 (65.5%)	10 (34.5%)		
Program of study				
Bachelor of midwifery and nursing	23 (76.7%)	7 (23.3%)	4.166	0.041*
Bachelor of public health	20 (52.6%)	18 (47.4%)		
Device used in online course				
Mobile	24 (75.0%)	8 (25%)	3.718	0.156
Laptop	9 (50%)	9 (50%)		
Both	10 (55.6%)	8 (44.4%)		
Strength of internet connection				
Mobile data	22 (78.6%)	6 (21.4%)	8.976	0.011*
Weak WIFI connection	12 (70.6%)	5 (29.4%)		
Good internet connection	9 (39.1%)	14 (60.9%)		
Previously taken online courses before this COVID lockdown				
First time	28 (66.7%)	14 (33.3%)	0.556	0.456
Already taken	15 (57.7%)	11 (42.3%)		
Currently involved in any online courses beside this				
Yes	11 (61.1%)	7 (38.9%)	0.048	0.827
No	32 (64.0%)	18 (36.0%)		
Hours spend for study purpose				
Up to 5 hours	20 (57.1%)	15 (42.9%)	1.151	0.283
More than 5 hours	23 (69.7%)	10 (30.3%)		

students agreed that online education is not applicable for medical education. This finding is in accord with the Nobel Medical College study where (40.2%) agreed on that statement.¹⁹

Half of our respondents felt that there was a reduced interaction between teachers and students during online sessions. This result is in line with the study conducted among Polish medical students (45%).⁷ Present study showed that half of students receive a quick response during online studies. Similarly, this is in accord with a Nepali study where 64.4% of students could clarify their queries through question/ answer session of online class.²⁴ Similarly, more than one third students in our study strongly agreed that online classes are disturbed due to poor networking. This figure was much higher in the Nobel Medical College study (68.4%).¹⁹

This study was single centered, cross sectional quantitative study and was performed only among bachelor students which may limit the generalizability of the findings. Academically, this study contributes to additional further research. On the basis of finding, advocate for improved technical support and infrastructure to alleviate technological challenges faced by students during online education.

CONCLUSION

Majority of the students perceived that online education saved their time, was helpful in learning process, but was not applicable for medical education, and also does reduce the teacher-student interaction. Large section of students found this mode of education to be effective be-

cause it helped them to organize their work on time and economy as well. The primary barriers for online education were electricity problem, expensive data and limited technological experiences. Prime stressors in online education were slow internet connection, eye problem/headache and back pain. Eventually large number of students had negative attitude towards online education. There was statistically significant association of attitude with ethnicity, type of program and strength of internet connection.

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REFERENCES

1. Verma A, Verma S, Garg P, Godara R. Online Teaching During COVID-19: Perception of Medical Undergraduate Students. *Indian J Surg.* 2020; 27:1-2. [10.1007/s12262-020-02487-2](https://doi.org/10.1007/s12262-020-02487-2). [PubMed]
2. Gautam R, Sharma M. 2019-nCoV pandemic: A disruptive and stressful atmosphere for Indian academic fraternity. *Brain Behav Immun.* 2020; 88:948-949. <https://doi.org/10.1016/j.bbi.2020.04.025> [PubMed]
3. Giovannella C. Effect induced by the Covid-19 pandemic on students' perception about technologies and distance learning. Conference: SLERD 2020. [Google Scholar]
4. Almaiah MA, Al-Khasawneh A, Althunibat A. Exploring the critical challenges and factors influencing the Elearning system usage during COVID-19 pandemic. *EduInf Technol.* 2020;1-20. <https://doi.org/10.1007/s10639-020-10219-y>. [PubMed]
5. Heyojoo BP, Bhattarai S, Subedi R. Effectiveness of online classes in Nepal: What three teachers felt after an experiment. *Online khabar.* 2020. [Google]
6. Kaur N, Dwivedi D, Arora J, Gandhi A. Study of the effectiveness of e-learning to conventional teaching in medical undergraduates amid COVID-19 pandemic. *National Journal of Physiology, Pharmacy and Pharmacology.* 2020; 10:1. <https://doi.org/10.5455/njppp.2020.10.04096202028042020> [Google Scholar]
7. Błczek M, Zagałczyk-Błczek M, Szpringer M, Jaroszyński A, Wołakowska-Kapłon B. Students' perception of online learning during the COVID-19 pandemic: A survey study of Polish medical students. *Medicine (Baltimore).* 2021;100:e24821. <https://doi.org/10.1097/MD.00000000000024821>. [PubMed]
8. Verma A, Verma S, Garg P, Godara R. Online teaching during COVID-19: perception of medical undergraduate students. *Indian Journal of Surgery.* 2020; 82:299-300. <https://doi.org/10.1007/s12262-020-02487-2>. [PubMed]
9. Smith, C, 2005. E-orientation: a cyber approach to orienting per diem and temporary nurses. *Journal for Nurses in Staff Development* 2005; 21: 204-12; quiz 213-4. <https://doi.org/10.1097/00124645-200509000-00004>. [PubMed]
10. Ward R, Stevens C, Brentnall P, Briddon J. The attitudes of health care staff to information technology: a comprehensive review of the research literature. *Health Info Libr J.* 2008; 25(2):81-97. <https://doi.org/10.1111/j.1471-1842.2008.00777.x>. [PubMed]
11. Cook DA, Levinson AJ, Garside S, Dupras DM, Erwin PJ, Montori VM. Internet-based learning in the health professions: a meta-analysis. *Jama.* 2008; 300(10):1181-96. <https://doi.org/10.1001/jama.300.10.1181> [PubMed]
12. Niebuhr V, Niebuhr B, Trumble J, Urbani MJ . Online faculty development for creating E-learning materials. *Edu Health* 2014; 27:255-61. <https://doi.org/10.4103/1357-6283.152186> [Google Scholar]
13. Dyrbye L, Cumyn A, Day H, Heflin M. A qualitative study of physicians' experiences with online learning in a master's degree program: benefits, challenges, and proposed solutions. *Med Teach* 2009; 31:40-6. [10.1080/01421590802366129](https://doi.org/10.1080/01421590802366129) [Google Scholar]
14. Bediang G, Stoll B, Geissbuhler A, et al. Computer literacy and e-learning perception in Cameroon: the case of Yaounde Faculty of Medicine and Biomedical Sciences. *BMC Med Edu* 2013; 13:1-8. [Google Scholar]
15. Attardi SM, Rogers KA. Design and implementation of an online systemic human anatomy course with laboratory. *Anat Sci Educ* 2015; 8:53-62. <https://doi.org/10.1002/ase.1465> [Google Scholar]
16. Naresh B, Reddy BS. Challenges and opportunity of E-learning in developed and developing countries-a review. *International Journal of Emerging Research in Management & Technology.* 2015;4(6):259-62. [Google Scholar]
17. Dawadi S, Simkhada P. Impact of COVID-19 on the Education Sector in Nepal - Challenges and Coping Strategies. *Sage Submissions.* 2020; 3:16. [10.31124/advance.12344336.v1](https://doi.org/10.31124/advance.12344336.v1). [Google Scholar]
18. Maurya R, Nayok SB, Sathyanarayana MT, Dhanashree AH. Acceptability, attitude, and satisfaction of online learning among nursing students during COVID-19 lockdown: a cross sectional study. *International Journal of Indian Psychology.* 2020; 8(2):69-76. [10.25215/0802.209](https://doi.org/10.25215/0802.209). [Google Scholar]
19. Adhikari S. Attitude towards Online Classes among Nursing Students during COVID-19 Pandemic at Nobel Medical College Teaching Hospital. *Journal of Nobel Medical College.* 2022 Jun 29;11(1):3-7. [Google]
20. Abbasi S, Ayoob T, Malik A, Memon SI. Perceptions of students regarding E-learning during Covid-19 at a private medical college. *Pak J Med Sci.* 2020; 36(COVID19- S4):S57-S61. [10.12669/pjms.36.COVID19-S4.2766](https://doi.org/10.12669/pjms.36.COVID19-S4.2766). [PubMed]
21. Koirala D, Silwal M, Gurung S, Bhattarai M, KC VK. Perception towards online classes during COVID-19 among nursing students of a medical college of Kaski District, Nepal. *Journal of Biomedical Research & Environmental Sciences.* 2020; 1(6):249-55. [DOI:10.37871/jbres1151](https://doi.org/10.37871/jbres1151). [Google Scholar]
22. Ali N, Jamil B, Sethi A, Ali S. Attitude of nursing students towards e-learning. *Adv Health Prof Educ.* 2016;2(1):24-9. [Google]
23. Daroedono E, Siagian FE, Alfarabi M, Cing JM, Arodes ES, Sirait RH, et al. The impact of COVID-19 on medical education: our students perception on the practice of long distance learning. *Int J Community Med Public Health.* 2020;7:2790-6. [DOI:10.18203/2394-6040.ijcmph20202545](https://doi.org/10.18203/2394-6040.ijcmph20202545). [Google Scholar]
24. Subedi S, Na yaju S, Subedi S, Shah SK, Shah JM. Impact of E-learning during COVID-19 pandemic among nursing students and teachers of Nepal. *International Journal of Science and Healthcare Research.* 2020; 5(3):68-76. [Google Scholar]