International Journal of Science and Healthcare Research
Vol.5; Issue: 3; July-Sept. 2020
Website: ijshr.com
Original Research Article *ISSN: 2455-7587*

Impact of E-learning during COVID-19 Pandemic among Nursing Students and Teachers of Nepal

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ABSTRACT

Background: The global spread of coronavirus disease 2019 (COVID-19) is triggering a range of public health responses. E-learning tools are playing a crucial role during this pandemic but in developing countries like Nepal, technological, education/literacy background and socio-economic challenges exist. These challenges might act as a hindrance to the E-learning process.
Purpose: The aim of this study was to assess the impact of E-learning during the COVID-19 pandemic among Nursing students and teachers of Nepal.
Methods: A descriptive cross-sectional online survey was conducted. Teachers and students of Nursing Faculties were selected from 13 different nursing colleges of Nepal who were conducting online classes during the COVID-19 Pandemic lockdown.
Result: Almost half of the teachers (42.3%) got disturbed for their online class because of the electricity problem, 48.1% because of internet problems. More than half of the students (63.2%) were affected because of electricity and 63.6% internet problem, only 64.4% of the students had internet access for their online classes. However, 64.3% of students used data pack for their online class, 58.4% used mobile (cell phone), and there is a significant association of Selected Demographic variables of the respondents with most of the Statements (Attitude and Problems/Activities). (P-value <0.05)
Conclusion: E-learning is a good opportunity to continue education but in the context of developing countries like Nepal it is not fully effective unless the factors affecting the E-learning process are taken into account. This finding will help to solve the actual problem faced by teachers and students while running online classes to make the education system more effective.

Keywords: Benefits, Impact, Nursing, Problems/ activities, Students, Teachers

INTRODUCTION

COVID-19 is an infectious disease caused by a newly discovered coronavirus. Formerly, this disease was referred to as '2019 novel coronavirus' or '2019 ncov'. COVID-19 was first identified in Wuhan, China in December 2019. Worldwide data regarding people affected by COVID-19 are 11.32 million confirmed cases, and 532 thousand deaths whereas in Nepal confirmed cases are 15,784, and 34 deaths as of July 7th 2020. [1]

The global spread of coronavirus disease 2019 (COVID-19) is triggering a range of public health responses. Schools and Universities closures are some of the highest-profile social (physical) distancing measures used to slow the spread of this infectious disease. Many countries in Asia and Europe have instituted a nationwide school closure, while some US school districts and states have also closed schools.

These closures prevent contact among students and reduce cases. [2]

This new virus and disease were unknown before the outbreak began in Wuhan, China, in December 2019. COVID-19 is now a pandemic affecting many countries globally. [3] Extensively the pandemic has changed social interaction and education is not an exception to it. Social distancing also known as the physical distancing is aimed to minimize the community transmission of COVID-19 which can rapidly spread in densely populated places as universities and schools.

Current observations suggest that people of all ages are generally susceptible to this new infectious disease. However, those who are in close contact with patients with symptomatic and asymptomatic COVID-19, including health care workers and other patients in the hospital, are at higher risk of SARS-CoV-2 infection. The management of COVID-19 has been largely supportive (WHO 2020) currently, the approach to COVID-19 is to control the source of infection, use infection prevention and control measures to lower the risk of transmission and provide early diagnosis, isolation and supportive care for the affected patient. [4]

In snowballing pandemic and the need for academic continuation educational institutions have shifted rapidly to distance and online learning. While public health officials largely agree that the general threat of COVID-19 is best fought with measures of social distancing, the specific acts of instituting emergency e-Learning protocols do not alter the pandemic itself, but only indirectly by limiting face-to-face classroom interactions. [5]

E-learning tools are playing a crucial role during this pandemic, it aims to help instructors, schools, and universities facilitate student learning during periods of universities and schools' closure. Besides, most of these systems are free which can help ensure continuous learning during this Coronavirus pandemic. [6]

The success of any information system depends on the usage of the system by users. [7] So, in the context of e-learning during pandemic student's ubiquity and acceptance of the e-learning system should be considered. The students and teachers both face problems when studying and teaching at home. In a developing country such as Nepal, technological, education/literacy background and socio-economic challenges exits which might act as a hindrance to the E-learning process. [8] In the existing education system before the pandemic, online teaching was not a major form of education in schools and universities, therefore most of the teachers have no or minimal experience in online teaching. [9] Furthermore, it is estimated that only about 56% of the population in Nepal have access to the internet, among them most of them reside in urban areas. Therefore, in the current scenario running online classes in rural schools in Nepal is not practically applicable. Therefore, the inequalities that arise between the students who live in the urban area and those living in rural areas, and also between the rich and poor who cannot afford to access the internet will further increase the gap in continuing education with e-learning during the pandemic. [9] Furthermore, in a nation like Nepal, there arises the legitimate question of how we bridge the digital divide.

Rationale of the study

The institution closures are impacting not only the students, teachers, and families, but have far-reaching economic and societal consequences. In response to school closures, UNESCO recommended the use of distance learning programs and open educational applications and platforms that schools and teachers can use to reach learners remotely and limit the disruption of education. [10]

According to UNESCO monitoring as of 7th July 2020, approximately 1,067,590,512 learners have been affected due to school closures in response to the

pandemic, 110 countries have implemented nationwide closures, impacting about 61% of the world's student population. Several other countries have implemented localized closures impacting millions of additional learners. Solely in Nepal, about eighty-seven lakh students ranging from preprimary to tertiary education level [ISCED levels 0 to 8] are affected due to COVID-19 pandemic closure. [11] While it is difficult to predict how the pandemic will unfurl, the possibility of extended restrictions on physical distancing exists.

The United Nations had reported that 166 countries closed schools and universities to limit the spread of the coronavirus which affected about One and a half billion children and young people, representing 87 percent of the enrolled population. [12]

In Southeast Asia like in many other developing regions, a large segment of the population doesn't have access to the Internet and electronic devices. And even people with access to the Internet experience some infrastructural divide. The infrastructural gap can be seen through several circumstances, including the discrepancy of Internet speeds in different regions. People in the city centers often enjoy significantly faster Internet compared to those living in less developed areas. [13]

According to NTA-Nepal Telecommunication Authority, total of 821,249 subscribers are using the internet in Nepal in 2019. [14] The country has a population of 29,086,128 as of 2020, based on Worldometer which depicts that not all students have access to high-speed internet. [15-16] Even those with high bandwidth internet have found that service is getting interrupted or slowing down due to high collective consumption as more people are using the internet to work, socialize and entertain themselves during the lockdown. While data packages on mobile networks are relatively faster, they are also far more expensive for students to afford on a regular basis. [16]

In the context of Nepal, the practice of online classes is new to many colleges (teachers and students) and also there is no good access to electricity and internet service in most parts of the country. So, this study was carried out to access the problems faced by students and teachers of Nepal during online classes.

METHODS

The study design was descriptive study which was focused to the nursing teachers and students of Nepal. The sample size of this study was 1116 respondents. Nursing colleges of Nepal were selected by convenience sampling method for the feasibility of the researcher where most of the nursing teachers and the students were taking online class. The primary quantitative data was obtained by self-administered questionnaire through online survey method. All the nursing teachers and students who filled the questionnaire at the time of collecting data were included in the study. Ethical clearance was taken from selected Nursing colleges of Nepal (Asian College for Advance Studies, Nagarik College of Health Sciences, Norvic Institute of Nursing Education, Kantipur Academy of Health Sciences, Everest College of Nursing, Little Angels College of Higher Studies, Sanjeevani College of Medical Sciences, Hope International College, National Academy for Medical Sciences, ChakrabartiHabi Educational Academy, Advance Studies of Health Sciences, Charak Academy, Chitwan Academy for Technical Education). All the collected information were entered in SPSS. Percentage and association was done for analysis with 0.05 level of significance.

The specific objectives were to assess the attitude towards benefits of e-learning among nursing students and teachers, to assess the activities/problems faced by students while learning through electronic media, to assess the activities/problems faced by teachers while teaching through electronic media, to assess the association of activities/problems faced

by students/teachers during online class with selected demographic variables

RESULTS

Among 1116 respondents, 104 respondents were teachers and 1012 respondents were students.

Among 104 teachers around half (51.0%) of the respondents were of age group 30-39 years. Furthermore, majority of the respondents were female (97.1%). More than half (56.7%) of the respondents had completed master degree. Likewise, more than half (52.9%) of the respondents were from Metropolitan city at the time of COVID-19 Lockdown. And lastly, most of their (44.2%) family income per month was between Nepalese Rs. 50,000 – 1, 00,000.

Among 1012 students, majority (40.5%) of the respondents were of age group 20-24 years. All of the respondents were female (100%). Majority of the respondents (44.6%) were from Bsc. Nursing. Likewise, around half of the respondents (49.8%) were from Municipality at the time of COVID-19 Lockdown. And lastly, more than half of the respondent's (56.1%) family income per month was less than Nepalese Rs. 50,000.

Part I: Information about Teachers

Table 1: Attitude of respondents towards benefits of E-learning (Teachers) n=104

Statement	Yes n (%)	No n (%)	Don't know n (%)
I enjoy taking class from home than from school	44 (42.3%)	51 (49.0%)	9 (8.7%)
It was difficult to face many people in school, which now is easy for me because of online class	16 (15.4%)	84 (80.8%)	4 (3.8%)
I am glad to be updated with digital technology used for taking class	97 (93.3%)	4 (3.8%)	3 (2.9%)
Online class saves time so I can do lots of my other works	75 (72.1%)	22 (21.2%)	7 (6.7%)
I am happy that I can involve in online class as well as take care of my family at the same time	82 (78.8%)	15 (14.4%)	7 (6.7%)
Online class saves my travel cost, as I do not travel from home to college	83 (79.8%)	16 (15.4%)	5 (4.8%)
Online class decrease my risk of accident, as I do not travel from home to college	87 (83.7%)	10 (9.6%)	7 (6.7%)

Table-1 highlights about the attitude of respondents (teachers) towards benefits of E-learning where almost half of the respondents (49.0%) did not agree taking class from home. Likewise, majority of the respondents (80.8%) did not felt difficulty to face many people in school. Most of the respondents (93.3%) were glad to be updated with digital technology used for taking class, also majority of the respondents (72.1%), (78.8%), (79.8%) and (83.7%) thought online class saves time, they could involve in online class as well as take care of their family, saves travel cost, decreased risk of accident respectively.

Table 2: Activities/Problems of respondents regarding E-learning (Teachers) n=104

Statement	Yes n (%)	No n (%)	Sometimes n (%)
I have internet access for online class at my home	88 (84.6%)	4 (3.8%)	12 (11.5%)
I get disturbed for online class because of electricity problem	44 (42.3%)	21 (20.2%)	39 (37.5%)
I get disturbed for online class because of internet problem	50 (48.1%)	15 (14.4%)	39 (37.5%)
I use internet data pack for online class	15 (14.4%)	63 (60.6%)	26 (25.0%)
I have full knowledge regarding media used for online education (like joining, recording, mute-unmute, leave etc.)	79 (76.0%)	13 (12.5%)	12 (11.5%)
I am happy with the time allocated (routine) of online class.	63 (60.6%)	21 (20.2%)	20 (19.2%)
I have gadgets available at my home for online class	79 (76.0%)	11 (10.6%)	14 (13.5%)
I use laptop/ computer for online class	76 (73.1%)	13 (12.5%)	15 (14.4%)
I use mobile (cell phone) for my online class	33 (31.7%)	45 (43.3%)	26 (25.0%)
I get disturbed during online class because of students leaving and joining in between my class	65 (62.5%)	13 (12.5%)	26 (25.0%)

Table-2 depicts the problems/ activities of respondents regarding E-learning where, 15.3% of respondents did not have full internet access for their online class at their home. Almost half of the respondents (42.3%) got disturbed for their online because of electricity problem, likewise around half of the respondents (48.1%) got disturbed for their online class because of internet problem. Moreover, 14.4% of the respondents used data pack daily and one quarter (25.0%) of the

respondents used data pack sometime for their online class, also around one quarter of the respondents (24%) did not have full knowledge regarding media used for online education (like joining, recording, mute-unmute, leave etc.). Only 60.6% of the respondents were fully happy with the time allocated for online class, likewise only 76% of the respondents had gadgets available daily for their online class, and 73.1% of the respondents used laptop/computer, 31.7% of the respondents used mobile (cell phone) for their online class daily. Majority of the respondents (62.5%) got disturbed during online class because of students leaving and joining in between their class.

Table 3: Activities/Problems of respondents regarding E-learning (Teachers) n=104

Statement	Yes n (%)	No n (%)	Sometimes n (%)
I get response from students when I ask question in between online class	65 (62.5%)	7 (6.7%)	32 (30.8%)
I take attendance and all the students are involved in online class	61 (58.7%)	20 (19.2%)	23 (22.1%)
I am able to satisfy my student's queries regarding course through online class	70 (67.3%)	6 (5.8%)	28 (26.9%)
I am able to fulfill daily objective regarding course through online class	60 (57.7%)	19 (18.3%)	25 (24.0%)
I am able to provide alternative notes to my students when they have problem in joining online class	74 (71.2%)	9 (8.7%)	21 (20.2%)
I am able to have good communication with students during online class	62 (59.6%)	27 (26.0%)	15 (14.4%)
I give assignment/ homework to my students after online class	67 (64.4%)	4 (3.8%)	33 (31.7%)
I provide feedback to students regarding their assignment/ homework	77 (74.0%)	5 (4.8%)	22 (21.2%)
I feel like I am suffering from eye problem/ headache because of online class	29 (27.9%)	42 (40.4%)	33 (31.7%)
I am anxious because of internet/ electricity problem during online class	40 (38.5%)	30 (28.8%)	34 (32.7%)
I am anxious that I am not able to clear student's queries regarding course through online class	32(30.8%)	42 (40.4%)	30 (28.8%)

From the above table-3 it is clearly evident that, only 62.5% of the respondents got response from students always when they asked question in between online class, and around half of the respondents (42%) did not fully agree with the statement that "I take attendance and all the students are involved in online class". Likewise, only 67.3% of the respondents were able to satisfy their student's queries regarding course through online class. Moreover, around half of the respondents (42.3%) were not able to fulfill daily objective regarding course through online class. Also, only 71.2% of the respondents were able to provide alternative notes always to their students when they have problem in joining online class. Almost half of the respondents (40.4%) were not able to have good communication with students every time during online class. Only 64.4% of the respondents gave assignment/ homework always to their students after online class. Likewise, only 74% of the respondents provided feedback to students regarding their assignment/ homework. More than half of the respondents (59.6%) felt like they were suffering from eye problem/ headache because of online class, (61.5%) were anxious because of internet/ electricity problem during online class and (69.2%) were anxious that they were not able to clear student's queries regarding course through online class.

Part II: Information about Students

Table 4: Attitude of respondents towards benefits of E-learning (Students) n=1012

Statement	Yes n (%)	NO n (%)	Don't know n (%)
I enjoy taking class from home than from school	359 (35.5%)	555 (54.8%)	98 (9.7%)
It was difficult to face many people in school, which now is easy for me because of online class	268 (26.5%)	656 (64.8%)	88 (8.7%)
I am glad to be updated with digital technology used for taking class	814 (80.4%)	136 (13.4%)	62 (6.1%)
Online class saves time so I can do lots of my other works	671 (66.3%)	242 (23.9%)	99 (9.8%)
I am happy that I can involve in online class as well as take care of my family at the same time	727 (71.8%)	189 (18.7%)	96 (9.5%)
Online class saves my travel cost, as I do not travel from home to school	724 (71.5%)	201 (19.9%)	87 (8.6%)
Online class decrease my risk of accident, as I do not travel from home to school	725 (71.6%)	(16.6%)	(11.8%)

Table-4 highlights about the attitude of respondents (students) towards benefits of E-learning where more than half of the respondents (54.8%) did not agree taking class from home ,(64.8%) did not felt difficulty to face many people in school, most of the respondents (80.4%) were glad to be updated with digital technology used for taking class, also majority of the respondents (66.3%), (71.8%), (71.5%) and (71.6%) thought Online class saved time, they could involve in online class as well as take care of their family at the same time, saved travel cost, decreased risk of accident, respectively.

Table 5: Problems / Activities of Respondents during E-Learning (Students) n=1012

Statement	Yes n (%)	No n (%)	Sometimes n (%)
I have internet access for my online class at my home	652(64.4%)	169 (16.7%)	191 (18.9%)
I get disturbed for my online class because of electricity problem	640 (63.2%)	102(10.1%)	270(26.7%)
I get disturbed for my online class because of internet problem	644 (63.6%)	101 (10.0%)	267 (26.4%)
I use internet data pack for my online class	333(32.9%)	361(35.7%)	318 (31.4%)
I have full knowledge regarding media used for online education (like joining, recording, mute-unmute, leave etc.)	712(70.4%)	183(18.1%)	117 (11.6%)
I understand the full course (content) provided by teacher during online class without any queries	327(32.3%)	404(39.9%)	281(27.8%)
I am happy with the time allocated (routine) for online class.	498(49.2%)	321(31.7%)	193(19.1%)
I feel like I am not getting full attention from teacher in online class	326(32.2%)	418(41.3%)	268(26.5%)
I have gadgets available at my home for my online class	568(56.1%)	263(26.0%)	181(17.9%)
I use laptop/computer for my online class	405(40.0%)	409(40.4%)	198(19.6%)

Table-5 depicts the problems/ activities of respondents towards E-learning where, only 64.4% of the respondents had internet access for their online class at their home. More than half of the respondents (63.2%) got disturbed for their online class because of electricity problem, also more than half of the respondents (63.6%) got disturbed because of internet problem. Moreover, more than half of the respondents (64.3%) used data pack for their online class. Only 70.4% of the respondents had full knowledge regarding media used for online education (like joining, recording, mute-unmute, leave etc.). More than half of the respondents (67.7%) did not understand the full course (content) provided by teacher during online class without any queries. Also, around half of the respondents (50.8%) were not happy with the time allocated (routine) for online class. Likewise, 32.2% of the respondents felt like they were not getting full attention from teacher in online class every time. Only around half of the respondents (56.1%) have gadgets available at their home for their daily online class and only 40% of the respondents used laptop/computer for their online class every time.

Table 6: Activities/Problems of respondents regarding E-learning (Students) n=1012

Statement	Yes n (%)	No n (%)	Sometimes n (%)
I use mobile (cell phone) for my online class	591(58.4%)	131(12.9%)	290(28.7%)
I can have good communication with my teacher during my online class	478(47.2%)	292(28.9%)	242(23.9%)
I am not interested to join my online class even if I do not have any problem for joining	159(15.7%)	621(61.4%)	232(22.9%)
I get notes/lecture materials from teachers even when I am not able to join my online class	664(65.6%)	161(15.9%)	187(18.5%)
I can clarify my queries through question/answer session of online class	652(64.4%)	170(16.8%)	190(18.8%)
I get regular assignment/ homework from teacher after online class	483(47.7%)	182(18.0%)	347(34.3%)
I do not have any problem in doing homework/assignment after online class	600(59.3%)	190(18.8%)	222(21.9%)
I am happy that my teacher is providing feedback for my homework/assignment	607(60.0%)	176(17.4%)	229(22.6%)
I feel like I am suffering from eye problem/headache because of my online class	511(50.5%)	230(22.7%)	271(26.8%)
I am anxious because of internet/electricity problem during my online class	646((63.8%)	110(10.9%)	256(25.3%)
I am anxious because I cannot understand full course (content) provided by teacher in my online class	474(46.8%)	244(24.1%)	294(29.1%)

From the above table-6 it is clearly evident that, more than half (58.4%) of the respondents used mobile (cell phone) for their online class. Around half of the respondents (52.8%) could not have good communication with their teacher during

their online class. Likewise, only 61.4 % of respondents were fully interested to join their online class even if they did not have any problem for joining. Only 65.5% of the respondents got notes/lecture materials every time from teachers even when they were not able to join their online class. Also, only 64.4% of the respondents could clarify their queries through question/answer session of online class. Around half (52.3%) of the respondents did not get regular assignment/ homework from teacher after online class. Only 59.3 % of the respondents did not have any problem in doing homework/assignment after online class. Likewise, only 60 % of the respondents were fully happy that their teacher was providing feedback for their homework/assignment. Around half of the respondents (50.5%) felt like they were suffering from eye problem/headache because oftheir online class every time. Moreover, more than half of the respondents (63.8%) were anxious because of internet/electricity problem during their online class every time and also majority of the respondents (75.9%) were anxious because they could not understand full course (content) provided by teacher in their online class.

Association of problems regarding E-learning with selected demographic variables of respondents were also calculated which showed that there was significant association of most of the problems with age and residence of teachers and with age, residence, level of education and family income of students.(P-value <0.05)

DISCUSSION

A study done by Mohammed Amin Almaiah (May 2020) on "Exploring the critical challenges and factors influencing the E-learning system usage during COVID-19 pandemic" shows that technological factors were also one of the critical factors that affect the usage of e-learning system according to respondents which were similar to this study that more than half of the students (63.2%) got disturbed for their online class because of electricity problem, and (63.6%) because of internet problem. Likewise, almost half of the teachers (42.3%) got disturbed for their online because of the electricity problem, and (48.1%) because of the internet problem. [6]

A study done by Owusu-Fordjour, C. (2020) on " The impact of COVID-19 on learning – The perspective of the Ghanaian Student highlights that only 18.7% of the respondents agreed of being able to learn effectively in the house, similarly in this study only 42.3 % of teachers and 35.5% of students agreed on enjoying to take the class from home. More than half (64.5%) of the respondents agreed that getting an understanding of concepts during individual studies is challenging, similarly in this study, 53.2% of students faced it challenging and 69.2% of teachers faced it challenging. Only 36.4% of the respondents had internet access in their locality to enable them to undertake online learning, whereas in this study 64.4% of the students had internet access and 84.6% of the teachers had internet access to undertake online learning. More than half of the respondents (69.2%) agreed to know about the online learning platform, similarly, in this study, 70.4% of the students and 76 % of the teachers agreed of knowing about the online learning platform. [17]

CONCLUSION

The study concludes that most of the respondents suffered from disturbances during online classes because of internet and electricity problem, also students were compelled to use data packs for their online classes. Although the course may be completed the objectives of students and college will not be fulfilled if the problems arising during online classes are not solved.

Ethical consideration:

Permission was obtained from the head of nursing colleges. Consent was obtained from each participant before data collection. Participants in this survey were

voluntary and no incentive was provided to the participants. Participants were assured that their anonymity and confidentiality will always be maintained.

Authors' Contributions

Study conception and design: Suraksha Subedi, Suvash Nayaju, Jennifer Mathias
Data collection: Suraksha Subedi, Suvash Nayaju, Sweta Subedi
Data analysis and interpretation: Jennifer Mathias, Sanjeev Kumar Shah, Suraksha Subedi, Suvash Nayaju, Sweta Subedi
Drafting of the article: Suraksha Subedi, Suvash Nayaju
Critical revision of the article: Suraksha Subedi, Suvash Nayaju, Jennifer Mathias

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How to cite this article: Subedi S, Nayaju S, Subedi S et.al. Impact of E-learning during COVID-19 pandemic among nursing students and teachers of Nepal. International Journal of Science & Healthcare Research. 2020; 5(3): 68-76.

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