Academic performance of medical students during COVID-19 pandemic at a medical college in Kaski, Nepal

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ABSTRACT

Introduction: The world has faced a disastrous period at the time of the pandemic of corona virus- 19. The education system was hampered along with all the sectors of life and therefore, it was realized that a switch from the conventional way of teaching to online teaching is needed. The current study was done to analyze the impact of the COVID-19 lockdown on the academic performance of medical students at Gandaki medical college of Pokhara, Nepal. **Methods:** It was a descriptive study of the first and second-year medical students of Gandaki Medical College. The Likert scale was used to measure the effect of the COVID-19 lockdown on academic performance and to evaluate online education. A census sampling technique was used to collect the data. **Results:** A total of 171 participants answered the questionnaire with a response rate of 87%. The data showed that covid-19 lockdown affected the academic performance of most participants of 98.2% with varying degrees. The mean evaluation score for online theory education was 4.7±2.06 while for the practical lessons was 2.06±1.4. **Conclusions:** COVID-19 pandemic lockdown affected the academic performance of most participants to varying degrees. The academic performance of medical students with the online teaching method is effective during COVID-19 lockdown.

Keywords: Academic performance, coronavirus, COVID-19, medical students, online learning.

INTRODUCTION

Coronavirus disease 2019 (COVID-19) outbreak from Wuhan city, China in December 2019 as pneumonia of unknown origin.[1] The causative agent of COVID-19 was identified as a novel coronavirus, severe acute respiratory syndrome coronavirus–2 (SARS–CoV–2) according to the international committee on taxonomy of viruses (ICTV).[2] It was announced as a pandemic on March 12, 2020 by World Health Organization.[3] Authorities in several countries worldwide declared either lockdowns, travel restrictions, social distancing, school and universities closure as a measure to break the chain of the spread of virus infection.[4] These measures have a negative worldwide effect on business, education, health, and tourism.[5]

The COVID-19 pandemic has affected all levels of the education system.[6] It has tested the limits of healthcare systems and challenged conventional practices in medical education.[7] Due to the suspension of classroom teaching in many colleges and universities, a switch to online teaching for students is started. However, many students have no access to online teaching due to a lack of either the means or the instruments.[8] This form of learning minimize the contact among the students themselves.[9]

Digital learning has become a boon to students however, it has created inequality in access to education which can affect the

academic performance of the students. Nepal, like any other low-income country, has big gaps among its citizen in terms of their socio-economic and education/literacy background. The existing system of education and the uneven distribution of its resources have often been blamed for the widening gaps between the haves and have-nots; in the advent of COVID-19, the digital device and the uneven access to e-learning and e-resources will increase the gaps even further by widening the inequalities between the advantaged and disadvantaged children.[10]

Recently, few studies were conducted that highlighted COVID-19 in relation to educational studies as COVID-19 has a profound impact on medical students.[11] In the second week of May 2020, United Nations Educational, Scientific and Cultural Organization (UNESCO) (2020) estimates that nearly nine million (8,796,624) students in Nepal are affected due to school/university closures in response to the pandemic.[12]

So, the COVID-19 pandemic lockdown has affected the academic performance of students. The most common problems associated with online education, included the availability of the internet in provincial and rural areas, the speed and cost of the internet, and the lack of interaction between students and lecturers. While specific problems associated with online education of subjects of medical science included lack of application of the clinical setting, lack of online information about certain subjects, and challenges of teaching practical lessons. These common problems vary from country to country and place to place.[13]

There are very few studies in Nepal that let us know about the academic performance of medical students due to the impact of the pandemic. This study can represent the importance and effectiveness of online classes which directly affect the academic performance of the medical students, at Gandaki Medical College, Pokhara, Nepal. This study was conducted to analyze the impact of the COVID-19 pandemic on the academic performance of medical students.

METHODS

This is a descriptive cross-sectional study carried out among all medical students in the first and second year of Gandaki Medical College Teaching Hospital and Research Center, Pokhara, Nepal over a period of five months from January to May 2022. Informed written consent was obtained from all the participants and confidentiality was assured. A census sampling technique was used to collect the data. Ethical clearance was obtained from the Institutional ethical review committee board, Gandaki Medical College (Ref no: 131/078/079).

After fulfilling the inclusion criteria (all the healthy individual medical students of the first and second year without cold, cough, and fever), a database proforma including the demographic details and the questionnaire (supplementary file) is given to the participants. They were asked to answer the questionnaire for research purposes. The final questionnaire for this study consisted of 19 questions[13] (13 closed-ended and 6 open-ended) which is divided into two sections based on the previous paper as follows: The first section included seven questions about the demographic characteristics of participants (sex, age, country, residence place, university, program level, and academic year). The second section evaluated the effect of the COVID-19 pandemic on the study or research, and online learning during the lockdown (the effect of lockdown on academic performance, electronic device used to study online, virtual learning tools used, time spent per day in online learning, evaluation of online learning both in the theoretical or practical parts, common problems encountered in the online learning, suggestions to improve the online learning, views about the effectiveness of the online learning system over the conventional learning system). This section consisted of twelve questions as follow: two single-choice questions, two multiple-choice questions, three Likert-scale questions, and five questions with free-text answer.

To measure the effect of the COVID-19 lockdown on the academic performance of medical students, 5-Point Likert Scale was used. Answers were converted into numeric values as follows (greatly affected = 5 points; considerably affected = 4 points; moderately affected = 3 points; slightly affected = 2 points; not affected = 1 point).[14] To evaluate online education during the pandemic lockdown, a 10-Point Likert Scale was used. Participants were asked to evaluate online education in general, and online education in practical lessons during the lockdown (1 was the lowest evaluation and 10 was the highest evaluation). The data were entered into the excel sheet and analyzed using statistical package for social sciences (SPSS) version 25.0 (IBM Corporation). Descriptive statistics were presented as counts and percentages to summarize the collected data.

RESULTS

Demographic Characteristics of Participants

The total number of responses was 171 responses out of 196 (response rate was 87%); 74(43.27%) were males and 97(56.7%) were females. The reason for the 13% non-response rate was they were not present during the study. The age of participants ranged from 18 to 25 years (mean±SD = 24.10±5.93 years). Most of the participants

were from the MBBS Stream 154(90.05%) while from the BDS very few 17(9.92%). Most of the students who participated in this lived-in city areas 142(83.04%) while in the rural area quite less 29(16.95%) (Table 1).

Table 1: Sociodemographic characteristics of participants

Variables	Total N (%)	Male N (%)	Female N (%)
	171 (100%)	74 (43.27%)	97 (56.73%)
Educational Stream			
MBBS	154 (90.06%)	67 (43.50%)	87 (56.50%)
BDS	17 (9.94%)	7 (41.17%)	10 (58.83%)
Residential area			
City	142(83.04%)	66 (46.47%)	76 (53.53%)
Rural	29(16.95%)	6 (20.68%)	23 (79.32%)

The effect of COVID-19 pandemic lockdown on academic performance

The result showed that the average evaluation was 3.53±0.96 points (the highest is 5 and the lowest is 1 point). Most of the participants 98.2% (n=168) believed that the COVID-19 pandemic lockdown affected their academic performance to varying degrees. One-sixth of the participants 28(16.37%) were greatly affected whereas 60(35.08%) were considerably affected, 59(34.5%) were moderately affected, and 20(11.69%) were slightly affected while only 3(1.75%) stated that lockdown had no effect on their academic performance (Table 2).

Table 2: Academic performance of the participants during the lockdown

| Variables	Not Affected	slightly Affected	Moderately Affected	Considerately Affected	Markedly Affected
Students	3(1.75%)	20(11.69%)	59(34.5%)	60(35.08%)	28(16.37%)

Evaluation of online education during COVID-19 pandemic lockdown

Our participants used several electronic devices to study online. The most used device was the laptop, 113(66.08%) followed by Smartphone, 68(39.76%), and tablet, 7(4.09%), while the least used device was the personal computer, 2(1.16%) (Figure 1). The study hours spent for online learning ranged from 1 h/day to 10 h/day with an average of 4.98±1.39 hour/day. Regarding the frequency of online studying hours, about 4(2.33%) of participants spent up to 2 hours/day in online learning, while 152(88.88%) of participants spent 3 to 6 hour/day, and 15(8.77%) of participants spent 7 to 10 hours/day. The mean evaluation score (the highest score is 10 and the lowest is 1) for online education, in general, was 4.7±2.06 while that for the practical parts was 2.06±1.4. About 102(59.6%) of participants evaluated online learning in general with 1 to 5 of 10 points, while 169(98.8%) of participants evaluated

online learning in practical lessons with 1 to 5 of 10 points (Figure 2). Participants showed that the online study materials were available mostly through online classes and youtube videos followed by pdf lectures, e-books, educational websites, university platforms, and educational applications (Figure 3).
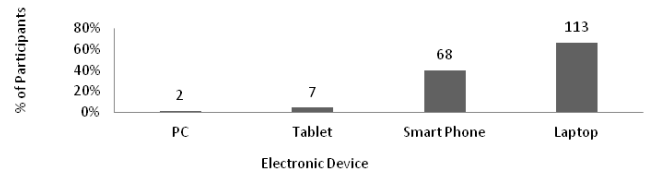
Figure 1: Device used by students to access online learning
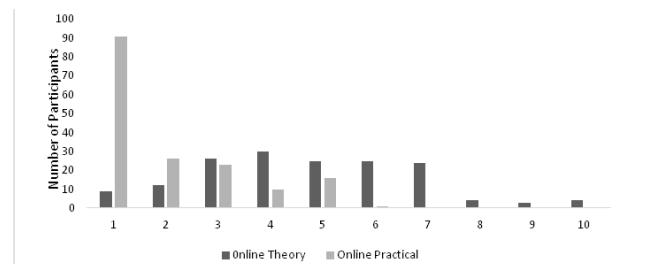
Figure 2: Evaluation of online classes
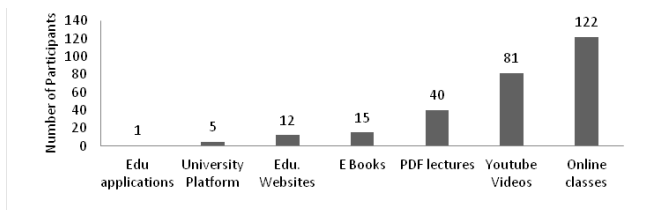
Figure 3: Available online study materials

The common problems with online learning of medical sciences

According to the participants' responses the common problems with online learning are:

- Lack of concentration
- Lack of interaction
- Internet Problems- decreased availability in mostly rural areas
- Slow speed and higher cost of internet
- Lack of online information about some subjects like anatomy
- Difficult to learn practical lessons

Recommendations to improve online learning in medical sciences

The students' recommendations to improve online were summarized as follows:

- The platforms for gaining online learning should be standardized for easy access to learning subject material.

- Improvement of internet speed and minimum charging of internet packages specially for online learning

- Improve the way of teaching to encourage students to learn

- Provide training for lecturers on online teaching

- Interaction between teachers and students should be increased by asking questions and taking online tests.

- Practical learning by interactive tools such as videos and 3D animation.

DISCUSSION

The novel COVID-19 disease which originated in Wuhan city, China in December 2019 extended vigorously, along with other countries of the world. Hence, governments around the world have either temporarily closed educational institutions which affected over 60% of the student population worldwide.[15] About 155 countries worldwide have introduced various tools and learning platforms as a solution to continue the education process during the pandemic.[16] Almost all over the world many universities have minimized gatherings by suspending or canceling all educational activities including suspension of classroom teaching to decrease the rapid spread of the virus. Hence, several colleges and universities worldwide switch to online teaching for students to minimize the contact either between the students and lecturers or between students themselves.[8]

The study showed that the COVID-19 pandemic lockdown affected the academic performance of most participants by 98.2% with varying degrees. This is in accordance with a previous study,[17] which reported that COVID-19 has a profound impact on medical students, dental medical students, and radiology trainees. Attending online courses has not so a good effect on students; a reduction in students' progress and success has been reported to be associated with taking online college courses, instead of traditional in-person courses.

The current study showed that the most popular device that students used to access online materials was the laptop followed by a smartphone, while the least used tool was the personal computer. This result is in accordance with the previous report that showed students use laptops and smartphones at higher rates than other equipment to access online lessons.[18] It is worth mentioning that many students have no access to online teaching due to a lack of either the means or the instruments because of economical and digital devices.[9] However, there were no such issues reported in the current study.

The most common problems associated with online education, in general, included the availability of the internet in provincial and rural areas, the speed and cost of the internet, the availability of electronic devices to access the internet, and the lack of interaction between students and lecturers. While specific problems associated with online education of medical subjects are lack of application of the clinical setting, lack of online information about certain subjects, such as human anatomy, challenge of teaching practical lessons online, and lack of the use of cadavers in anatomy practical studies.

To improve online education in general it is recommended to provide platforms for online learning, provide students with electronic devices to access the internet, improve the internet speed, provide cheaper or even free internet packages during the pandemic, provide professional training for lecturers, and enhance the interaction between students and teachers. Additionally, to improve online education it is recommended to provide virtual resources to mimic the laboratory work, teach practical lessons by interactive tools, such as videos and 3D animation, and provide accessible e-books and instructional videos for practical lessons.

The results obtained in this study are based on the retrospective observational study. They are therefore subject to biases and confounding that may have influenced our result, however, we took precautions and scrutinized the procedure effectively to avoid the bias. Further, the outcome may change with time, increasing the number of participants, and the individual experience.

CONCLUSIONS

The current study showed that the COVID-19 pandemic lockdown affected the academic performance of most participants with varying degrees. Our findings have important implications as a future reference to improve Online Learning in Medical Science by making it more interactive, showing medical procedures in real situations, giving concise information, and providing 3D virtual tools to mimic the real situation.

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