Barriers Perceived by Medical and Faculty Members for the Implementation of Virtual Classroom During the Covid-19 Pandemic in Nepal

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ABSTRACT

Background: A virtual classroom allows learner and educator to connect online in real time through digital learning environment. The present study sought to identify the barriers perceived by medical and nursing faculty members for the implementation of virtual classroom which was executed in Nepal to stay up with the scholarly schedule after nationwide lockdown due to COVID -19.

Methods: This descriptive cross-sectional study was conducted from December 2020 to April 2021 among 77 faculty members of National Medical College, Teaching Hospital, Parsa, Nepal using convenience sampling technique. Data were collected using a semi-structured, self-administered questionnaire. The obtained data were analyzed through SPSS version 23, using descriptive statistics.

Results: The study findings revealed that the mean age of 77 faculty members was 35.35±6.46 years, with a minimum of 25 and maximum of 72years. The majority of the participants (59.7%) were male faculty members. As to academic qualification, 87% had completed postgraduate level. Regarding their current academic position, 74% were lecturer. Similarly, 38.9% of the faculty members were from clinical department. The results revealed that the faculty members perceived "Difficult to teach the practical content which requires demonstration" as a major barrier under technological barrier domain with a mean value of 4.30±1.027. "Difficulties in working from home" was as a major barrier under institutional barrier with a mean value of 3.44±1.164. Similarly, "Lack of control over students' cheating" was found to be a major barrier under interpersonal barrier domain with a mean value of 4.14±0.884.

Conclusion: This study identified the barriers felt by medical and nursing educators while implementing virtual classes as an alternative to physical classroom. It is important to plan effective strategies to overcome the potential challenges in implementing quality virtual classes.

Keywords: Learning, Virtual classroom, Faculty, Perception, Barrier, Education, Distance

Introduction

The Coronavirus Disease 2019 (COVID-19) outbreak which was originated and restricted only in China until February 2020 suddenly altered into a global pandemic disease from 11th of March, 2020 (1). The closure of the educational institutions affected more than 70% of the world's student population as a non- pharmaceutical intervention to prevent the spread of the pandemic (2).

Consequently, all educational activities, suddenly, had to be transferred within virtual settings. The shift from physical to virtual was quite fast: usually a few days at university level, where the decisions were largely centralized, and from one to a few weeks in schools due to several concurrent criticalities. One month after the lock down, however, also the schools start to be almost fully operational, while at university we have already been in the position to perform preliminary studies on the effects induced by the "swap to digital". This situation can be considered, in fact, a unique "experimental setting" because without the pandemic it would not be ever possible to force the institutions, professors and students to swap, in such a short time, from physical to virtual (3).

UNESCO estimates that more than 90 percent of the world's students (1.7 billion) had to stay home under lockdown to combat the spread of COVID-19. In Nepal, schools and universities were closed and all examinations were suspended until further notice. Over 35,000 schools are currently closed and over eight million students are staying at home (4). On March 19, 2020, the government of Nepal declared suspension of all classes in order to prevent the spread of COVID-19 (5).

In the midst of the crisis, medical universities in Nepal were also forced to suspend all their classes. Tribhuwan University (TU) is the oldest and largest public university in Nepal. Since in-person teaching was not feasible, the executive council of TU released a circular (22-Apr-20 referral no: 177/076/077) to all its institutions and affiliated colleges to resume their teaching-learning activities through virtual means so as to keep in pace with the academic calendars (6).

A virtual classroom is conducted in real time, allowing teachers and students to interact, communicate, collaborate, and explain ideas through video conferencing (7). Traditional classrooms are being substituted by innovative virtual teaching techniques in the form of webinars using various electronic platforms such as Zoom Meeting, Google Cloud, etc. This transition in medical and nursing education has many challenges, especially in developing countries like Nepal, which are struggling with the lack of strong Internet bandwidth and smart gadgets (8). Transition from traditional to virtual classroom is a new challenge to the education system in Low- and Middle-Income Countries (LMICs) and Nepal is not an exception (9).

The study of the effectiveness of online classes has become an essential component in the education system in Nepal since it is a new concept for teaching and learning in developing country like Nepal. This method can be difficult for those teachers who are specialized in conventional teaching and are not comfortable enough to use electronic gadgets. After reviewing the related literature, we found that there was little information about the barrier perceived by medical and nursing faculty for the implementation of virtual classroom in Nepal. Therefore, the researcher aimed to explore the barriers perceived by medical and nursing faculty members for the implementation of virtual classrooms.

Methods

Study Design and Setting

A descriptive cross-sectional research design was adopted to identify the barriers perceived by medical and nursing faculties in implementation of virtual classes among the Medical and Nursing faculty members of National Medical College, Teaching Hospital, Parsa, Nepal. The study was conducted from December 2020 to April 2021; the data collection period was 24/01/2021-06/02/2021.

Sample Size and Sampling Technique

According to the data from the principal

and hospital director office, there were 130 faculties (medical and nursing) members. Out of the total population, only 77 faculty members met the inclusion criteria. Non-probability convenience sampling technique was adopted. All the faculty members who had taken at least 10 virtual classes during COVID-19 lockdown and were willing to participate were included the study; the faculty members who were on official leave during the time of data collection were excluded from the study.

Data Collection Tool and Techniques

A Semi-structured, self-administered Likert questionnaire in English language was developed by the researcher in constant guidance of research advisor, intense review of the related literature, and suggestion from experts in the related field. The tool used comprised of 2 sections.

Section A: It consisted of demographic variables such as age, gender, academic qualification, current academic position, working department.

Section B: It consisted of 15 questions in a five-point Likert scale, ranging from Strongly disagree (1) Disagree (2), Neutral (3), Agree (4), Strongly agree (5) in 3 domains for the measurement of the participants' perception about Technological barrier with five items Institutional barrier with three items, and , Interpersonal barrier with seven items. The qualitative content validity of the instrument was established by seeking the opinion of seven experts in the related field and review of the related literature. To ascertain the reliability, we distributed the tool among seven faculty members in a similar setting. Cronbach's alpha was computed to measure the internal consistency of the tool and the obtained value was 0.71.

Data Analysis

After receiving the completed questionnaire from 77 participants, the data were organized for editing, classifying, coding, and tabulating of the information. Data processing was done manually and using Statistical Package for Social Science (SPSS) version 23. Descriptive statistics (frequency, mean, standard deviation and percentage) was used to find out the perceived barriers.

Results

A total of 77 faculty members were enrolled in this study. Regarding the socio-demographic information, their mean age was 35.35 years (SD±6.46, Min- 25, Max-72). The majority of them (59.7%) were male faculty members. As to academic qualification, 87% had completed the postgraduate level. Regarding their current academic position, 74% were lecturer. Similarly, 38.9% of the faculty members were from Basic Sciences Department (Table 1).

Regarding the perceived barriers, faculty members perceived "Difficult to teach the practical content which requires demonstration" as a major barrier under technological barrier domain with a mean value of 4.30 and standard deviation of ±1.027. Faculty members perceived "Difficulties in working from home" as a major barrier under institutional barrier with a mean value of 3.44 and standard deviation of ±1.164. Faculty members perceived "Lack of control over students cheating" as a major barrier under interpersonal barrier domain with a mean value of 4.14 and standard deviation of ±0.884 (Table 2).

Discussions

The present study describes difficult to teach the practical content which requires demonstration, difficulties in working from home and lack of control over students cheating as the major barriers perceived by medical and nursing faculty members for the implementation of virtual classroom. This result is similar to that of the study conducted at University in Lebanon which concluded lack of control over student cheating, lack of consistent electricity, and lack of consistent electricity were found to be the major barriers in the implementation of virtual classroom (10).

In contrast, lack of training was found to be the major barrier in a study conducted at

Table 1: Demographic Characteristics of the Participants. n=77

Demographic Characteristics	Number	Percentage
Mean age 35.35		
SD=±6.46, Min=25, Max=72		
Gender		
Male	46	59.7
Female	31	40.3
Academic qualification		
B.Sc. Nursing / BNS	7	9.1
M.Sc.Nursing/MN/MD/MS/MDS	67	87.0
Ph.D./ DM	3	3.9
Current academic position		
Instructor	7	9.1
Lecturer	57	74.0
Associate Professor	11	14.3
Professor	2	2.6
Department		
Clinical	28	36.4
Basic sciences	30	38.9
Nursing	19	24.7

SD: Standard Deviation, Min: Minimum, Max: Maximum

Table 2: Descriptive Analysis of Perceived Barrier by Medical and Nursing Faculty Members. n=77

Items	Mean	SD
Technological barrier		
Inadequate smart gadgets for virtual classroom	3.36	±1.123
Slow internet access	3.49	±1.143
Lack of consistent electricity	2.99	±1.230
Time limitations	3.68	±1.069
Difficult to teach the practical content which requires demonstration.	4.30	±1.027
Institutional barrier		
Lack of administrative support	2.88	±1.038
Lack of training and workshops helping to bridge the technology gap	3.34	±1.108
Difficulties in working from home	3.44	±1.164
Interpersonal barrier		
Personal anxiety with new technology	2.49	±1.242
Difficult to conduct group assignment	3.74	±0.951
Lack of social interaction within class	3.94	±1.056
lack of interaction between peers	3.45	±1.095
Lack of control over students cheating	4.14	±0.884
Inability to grasp visual cues from students	3.90	±0.882
Lack of timely feedback from students	3.88	±0.903

SD; Standard Deviation

Hormozgan University of Medical Sciences (11). Similarly, barriers which affect the development and implementation of online learning in medical education include time constraints, poor technical skills, and inadequate infrastructure, absence of institutional strategies and support, and negative attitudes of all those involved (12). The variation in the findings may be due to difference in the study setting and the sample size. Along with traditional learning processes, technology-guided processes have to be used to facilitate virtual learning by overcoming the barriers in upcoming days.

Institutions has are suggested to plan for faculty development programmed to make the faculty members acquainted with new technologies to be adopted in transition from traditional classrooms to virtual ones.

The finding of the study mainly focused on finding out the barriers perceived by medical and nursing faculty members for the implementation of virtual classroom. A study done in Nepal revealed that the institution and educators need to plan effective strategies to minimize the barriers in order to conduct quality virtual classes in coming days (13). A similar study conducted in an Iranian medical university concluded that the learners and educators need to be more interactive through the adoption of appropriate content-based diverse modalities to deliver virtual education despite the barriers related to infrastructure of hardware and network (14).

It is suggested that educators should prepare themselves for effective virtual class. There is a need for medical educators to gain a comprehensive overview of virtual platforms and technologies to make the classroom more interactive and effective. This conclusion is in to the same line with a study conducted in Farhangian University, Tehran, which concluded that technology is a barrier to successful implementation of virtual classroom (15). Administrators should pay attention to developing technology-guaranteed academic activities along with hands on training facilities to enhance ICT skills among medical and nursing faculty members.

Limitations and Suggestions

The study was conducted only among the medical and nursing faculty members of National Medical College Teaching Hospital, Birgunj, so the findings of this study might be hard to generalize to all faculty members of Nepal. This study failed to include all the clinical faculty members as they did not meet the inclusion criteria of taking 10 virtual classes during COVID-19 lockdown. In-depth exploration of the perceived barriers should be carried out for better facilitation of virtual learning in coming days.

Conclusion

Difficult to teach practical contents requiring demonstration, difficulty in working from home, and lack of control over students learning were perceived as the major barriers by medical and nursing faculty members for the implementation of virtual classroom.

Acknowledgement

Authors Contribution

PP & AS proposed the research idea. PP, RG & AS finalized the idea and wrote the proposal. PP & AS together with RG collected the data and monitored the data analysis. PP prepared the draft of the manuscript. AS & RG revised and finalized it.

Conflict of Interest: None declared.

Ethical Considerations

Ethics committee approval was obtained from institutional review committee of National Medical college (IRC-NMC/503/077-078) Parsa, Nepal. Written informed consent was placed at the first page of the tool and obtained from each respondent. The objective of the study was explained, and each respondent was assured of the privacy and confidentiality of information provided. Also, the formal administrative approval was obtained from the principal of National Medical College, Parsa, Nepal. Self-introduction and purpose of the study were explained to all the respondents.

Funding

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