Changing paradigm in learning in the field of Neurosciences during COVID-19

Resha Shrestha[1]
[1]Annapurna Neurological Institute and Allied Sciences, Maitighar, Kathmandu, Nepal

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Abstract

Although the number of COVID-19 cases are decreasing in recent days and a sense of normality can be felt, the situation was completely different for a couple of years. Like most of the fields, learning in the field of neurosciences was also heavily impacted due to COVID-19. Multiple ways of learning gained popularity during the pandemic which has changed the way neuroscience is taught and learnt these days.

Key words: COVID-19, Learning, Neurosciences

The coronavirus disease 2019 (COVID-19) is caused by "Severe Acute Respiratory Syndrome Coronavirus 2 and has been declared pandemic by World Health Organization on 11th March 2020. [1] This disease, although was first seen in Wuhan, China in December 2019, it rapidly spread around the world and have seen multiple number of peaks of cases in different countries. [1] In order to prevent spread of the disease, multiple strategies have been followed which mainly aims to limit physical interaction between people. Before availability of vaccines of COVID-19, strict rules like travel restrictions, lock down of cities or even the entire county, maintaining strict social distance between individuals were very common. These all-preventive modalities meant conventional teaching learning practices like on-site classes, participation of on-site conferences, continued medical education (CME), hands on learning were almost impossible due to the current pandemic. However, just like adaption of learning in every other field in these scenarios, learning in the field of Neurosciences also saw a lot of innovation and adaption to new technology. Some of the major new learning techniques and terminologies in the field of neurosciences in our setup are discussed as below.

Online classes, Webinars, virtual CME, virtual conferences

Although the term "Webinar" was coined decades before, this was not a common practice before the COVID-19 pandemic. COVID-19 pandemic made webinar a common place to share and learn. This was also well utilized by neurosurgeon's community. Major national and international conferences in field of neurosurgery were done in these platforms during COVID pandemic. Monthly webinars of Nepalese society of neurosurgeons (NESON) were conducted every month by different hospitals in the pandemic. The yearly national conference was a virtual conference and it was conducted along with WFNS (World federation of Neurosurgeons) foundation, and Vietnam society of Neurosurgeons in September 2020. There were altogether 60 papers presented virtually.

Similarly, concepts of hybrid conferences were also present. In the hybrid conference, there were live participants gathered for on-site conference and remaining participants participated in a virtual platform. [2,3].The third international conference of Nepalese society of Neurosurgeons (INCONESON III) and 2nd annual meeting of Neurospine chapter along with 2nd interim meeting of Asian Astralasian Society of Neurological conference (AASNS) was a hybrid conference. It was organized for two days in November 2021. This conference was also live streamed and altogether 150 papers were presented in hybrid fashion. It was very rewarding to see moderation and presentations from highly esteemed international neurosurgeons live. In one of the lectures the participation in zoom was more than a thousand.

Common tools for online classes, webinars, virtual CME, virtual conferences are "Google meet" (Google),

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Address for correspondence:
Dr. Resha Shrestha
Neurosurgeon, Annapurna Neurological Institute and Allied Sciences
Kathmandu, Nepal
E-mail: reshkums@hotmail.com

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"Zoom" (Zoom Voice Communications Inc., San Jose, CA), "Panopto" (Panopto Inc., Seattle, WA), "Collaborate Ultra" (Blackboard Inc., New York, NY), and "Big Blue Button" (Big Blue Button Inc., Ottawa, Canada).[4]

Online mentoring

Daily case discussion, residents teaching was also conducted in virtual platforms whenever COVID-19 cases were on rise. Similarly, exams of neurosurgery residents were also conducted on a virtual platform. A major issue for mentoring in virtual platforms is difficulty in teaching skill-based learning such as operative procedures, patient examination etc. In some scenario telemedicine in the form of online consultation of the cases and advices for workup and treatment of the patient was commonly done. [5] [5,6]

Synchronous and Asynchronous online learning

Open-source learning platforms like MOODLE and google classroom are popular platforms for synchronous and asynchronous online learning. With these, assignments can be easily given along with feedback on the assignments. Also, necessary learning materials can be added to access for learning. Mixture of both synchronous and asynchronous online learning is usually better compared to only one type of online learning.

SWOT analysis of "online-learning" in the field of neurosciences.[4]

Strength	Weakness	Opportunity	Threat
Development of online resources.	Familiarity of newer technology.	Possibility of better national and international academic collaboration.	Technical issues (usually in the form of issues in internet connection) during the teaching learning activities.
Reproducibility of lectures in the form of saved videos.	Learning curve in use of online resources.	Possibility of remote working and simultaneous collaborative work on a common online platform.	Device failure during online learning.
Better participation of people from different institution and different location (national/ international).	Need of appropriate devices and internet access in all the participants.	Possibility of hybrid learning (on-site and on-line learning) in favorable circumstance.	Possibility of less participation of students during online teaching-learning sessions.
If costs on devices and communication is not taken into account, online learning might be cheaper compared to on-site learning as it does not include travel costs, costs of physical setup etc.	Less effective if two way communication is required or live demonstration of skills or scenario is required.		
	Possibility of reduced teaching-student relationship and less engagement of students.		
	Lack of practical sessions, hands-on sessions like cadaveric session, teaching skills in instruments.		

Conclusion

COVID-19 pandemic is not an ordinary scenario and extraordinary methods of learning have been adopted in the field of neurosciences which is very similar to other medical fields. COVID-19 has taught us to change the paradigm in learning and these methods will be an integral part of teaching learning even if the pandemic ends.

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