Letter to the Editor

Smartphone: an asset in medical education and health care in the era of COVID-19 pandemic-our perspective

Sir,

The COVID-19 cases are increasing rapidly and the government across the world has imposed the social distancing along with maintaining good hygiene. The infection with corona virus ranges from mild common cold to acute respiratory illness leading to morbidity and mortality.¹ There is no specific treatment for COVID-19 infection except the preventive measures like social distancing, lockdown etc.² To maintain social distancing so as to curb the spread of disease, schools and colleges were closed long back since March 2020. Online classes took over the conventional classroom teaching.

Smart phones have becoming increasingly popular nowadays both in personal and professional spheres.³ With the introduction of new technology which has transformed many aspects of our culture, commerce, communication and education, the smart phones have just revolutionized our education system. In the COVID era, 'smart phones' emerged as a suitable tool not only for continuing medical education, training, research and as a potential "learn anywhere" resource for students but also for updating information about COVID-19 infection and patient care and as a source of entertainment.⁴ In this article, we have given our perspective on the extended role of smartphone technology in education, training, research and patient care and the comparative use in COVID and pre COVID era (Figure 1).

Figure 1: Extended role of smartphone technology in education, training, research and patient care.

Medical students have already been using the mobile apps and information from Google Wikipedia, Medscape etc. in learning various topics. But this COVID Pandemic introduced new realms in the web-based learning. It is difficult to carry bulky laptops and light-weight advanced iPad are not a cup of tea for everyone. Smartphones are the only resource which is easily available to almost all the students, as a hand-held computer due to their powerful on-board computing capability, capacious memories, large screens, on-board personal management tools, high quality cameras and open operating systems that encourage application (apps) development.⁵

In the pre COVID period, in our Institute, students used to come for clinical postings in outpatient departments (OPDs). They were supposed to spend 2-3 hours in OPD observing the history taking skills, patient examination and then taking part in interaction. Many a times, students were given a task like a complete blood count report and were asked to search for the normal and abnormal parameters on their mobile phones, or to calculate the expected date of delivery or period of gestation via online calculators and compare it with manual calculation. This was then followed by discussion during which students also learnt which sites to access reliably and which apps to download. During patient examination also, if some interesting finding was seen, phone was used to capture an image after appropriate consent and concealing the patient identity, to be shown to rest of the students. There are many relevant sources of study material which are being used by the medical students to enhance their knowledge in clinical field.⁵

'Medical encyclopedia'-is a comprehensive medical reference from the university of Maryland medical center. It contains more than 50,000 pages of medical information in detail.

'PubMed mobile pro'-This provides a simplified, mobile friendly web interface to access PubMed. PubMed contains millions of article citations from thousands of biomedical journals. Many citations include abstracts.

'Medscape'-Medscape is the leading medical resource most commonly used by physicians, medical students and other healthcare professionals for clinical information.

'Research gate and Google scholar' are the platforms to see what your peers are publishing. This keeps a person in medical field motivated and get better ideas to do

research. The medical students are now being involved in research right from them under graduation in the form of STS (short term studentship) projects.

Other than this, it is easy to access the books, professional society guidelines and references through smartphone anytime and anywhere. Few limitations of e-learning do exist like many students don't have reliable internet access and few struggles with the technology but this can be overcome in the near future.

During the COVID era, smart phones added many feathers to the existing usage not only in medical education but also in research and patient care. They enabled the students to have access to e-classrooms through Google meet™, Zoom™ and Microsoft teams™. The classroom lectures got converted into easy-to-understand power point presentations. Not only the undergraduate students but also the post graduate students continued their classes at their ease without the clinical work being hampered. With limited workforce, it was very easy to continue medical education with the help of smart-phones.

Several studies have evaluated the use of smartphones in supporting healthcare and doing public health interventions, mainly in the collection and collation of data for healthcare research, education and clinical practice.^{6,7} These phones were used by our students also to fill various research questionnaires related to infection prevention practices and knowledge and attitude based, through google forms.

Smartphones were also widely used for supporting telemedicine in the present scenario to decrease the footfall of patients for minor ailments. In a developing country like ours, people from rural areas find it difficult to take appointment on telemedicine and then retrieve their prescriptions online. User friendly smartphones served a great support system through Whatsapp™ in providing consultation to people in remote areas. Many researchers have also acknowledged the importance of smart phones in this field.⁸

Smartphones have given the opportunity to attend various virtual conferences, CME and webinars at affordable cost and time. The online courses also added to the e-learning process.

COVID 19 has given a valid reason to each one of us to involve with smart phone. During lockdown it was the best way to connect with the loved ones. Smartphone has emerged as a bliss for the people who were in isolation or admitted in hospitals when there was no one around them. It was through these phones only that helped the doctors posted in the COVID ward in PPE (personal protective equipment) to communicate appropriately to other staff and faculty for patient care and to counsel the patient's relatives.

The government of India developed an app Arogya Setu which works with Bluetooth or global positioning system (GPS) in the smartphone.⁹ This app helps in finding and tracing the person who is infected with corona virus. It also gives an alert and instruction to the asymptomatic COVID 19 positive person for self-isolation or medical help. This Arogya Setu app helps in early identification and prevention of potential risk factors in person and acts as a shield to protect others from infected person. This was another potential advantage of smart-phone.

Despite multiple benefits of smartphone there are few drawbacks also. Continuous use of smartphone has many ill effects on mental and physical health and can lead to many medical problems like headache, backache, neck pain and carpal tunnel syndrome. It can develop compulsive behavior, addiction issues. Other than these, there are limitations like financial cost of smartphone, lack of privacy, inaccessibility of internet everywhere, connectivity, inability to use technology and technical failures. But in near future, smart phones will completely change the way of teaching, learning and practice of science in medical field.

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