

A combined approach in prolonged COVID-19 pandemic to teach undergraduate surgery students—future primary care physicians

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ABSTRACT

Our aim during prolonged COVID-19 pandemic, is to keep the training of undergraduate surgery students rolling as they may be future GPs (general practitioners) or primary care physicians of tomorrow. World Health Organization (WHO) in its public advisory for COVID-19 pandemic has stressed on physical distancing and this has resulted in discontinuation of in-person undergraduate surgery lectures and demonstrations. Also WHO has laid out directions to deliver only essential health-care services, which has resulted in reduced patient load in didactic surgical clinics and fall in number of planned surgeries and adversely effected the teaching of undergraduate surgery students. So there is an urgent need to reschedule and revise the teaching activities for undergraduate surgery students. Therefore, with this background, we plan to propose certain web-based, distant learning novel strategies to keep the training of undergraduate surgery students rolling. These novel strategies include adopting social media platforms and flip classroom concept to replace in-person lectures, involvement of undergraduate surgery students in telemedicine consultation to substitute didactic clinics, use of multimodal computer-based programs, and use of high-end surgical videos for learning of basic surgical skills. These web-based, distance training modalities can be collaged to form training modules for undergraduate surgery students, and as they are GPs or primary care physician of tomorrow, they can use these e-technologies for patient care and patient education also. It was concluded that proposed web-based strategies may be of use to role training of undergraduate surgery students. As some of them may be future GPs/primary care physicians of tomorrow, they can use this concept of e-technology in patient care and patient education in difficult time. Although these virtual technologies can compensate for gap in learning in times of crisis, these cannot replace real-time experience of learning.

Keywords: E-Learning, surgery, teaching, undergraduate

Introduction

COVID-19 pandemic has adversely effected the teaching and training work related to medical schools in most of the parts of world. Therefore, as faculty in surgery, besides patient care we are also concerned with the training of undergraduate surgery students. The undergraduate medical students of today may

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Received: 08-06-2020

Revised: 09-09-2020

Accepted: 22-09-2020

Published: 30-11-2020

become future GPs (general practitioners) or primary care physicians of tomorrow.

Background

Health organizations all over the world as WHO (World Health Organization) in its public advisory for all the countries affected by the pandemic of COVID-19 have largely stressed for physical distancing.

This has led to discontinuation of in-person lecture schedules and other teaching activities for undergraduate surgery students,

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How to cite this article: Agarwal PK. A combined approach in prolonged COVID-19 pandemic to teach undergraduate surgery students—future primary care physicians. *J Family Med Prim Care* 2020;9:5480-3.

Access this article online

Quick Response Code:



Website:
www.jfmpc.com

DOI:
10.4103/jfmpc.jfmpc_1129_20

which include didactic clinics, clinical case presentations, demonstrations, and so on.^[1]

Further to add there had been directives from WHO to deliver only essential health-care services and delay or defer elective surgical consultations and elective surgical procedures.^[2,3]

As a result, there is a compromise in teaching activities and learning of undergraduate surgery students and some of them will grow up and may become GPs.

Now as pandemic is getting prolonged and because of discontinuation of undergraduate teaching activities for a longer time, there is an urgent need to reschedule and revise the teaching activities for undergraduate surgery students.

Methods

We intend to keep the teaching and learning process of undergraduate surgery students rolling during COVID-19 pandemic, at the same time taking care of safety of teachers, students, and patients. For this, we propose certain strategies to compensate the gap in learning of undergraduate surgery students during this crisis time.

Results

Novel strategies

Let routinely Department of Surgery organize academic activities for undergraduate surgery students as per the schedule approved by the academic section of medical school to which the department is affiliated. Due to the prevailing crisis of COVID-19 pandemic with restricted gatherings and limited patient care, such activities cannot be conducted on personal level; therefore to combat this situation, a combined approach has to be adopted.

Social media Platform as distant learning modality

One such is adoption of social media platform for daily surgical topic discussions and seminars, as distant learning modality.

Some of the social media platforms in use are Facebook, YouTube, Instagram, and Twitter. Closed membership Facebook groups which have gained popularity should give chance to present cases, ask questions, and learn from other's experiences and recommendations. It can also be used for topic discussions followed by question and answer sessions without a personal meeting.^[4]

This social media platform can be used as a vehicle for exchanging knowledge and information regarding health-related issues in this difficult time.

Al Kalbani *et al.* in 2019 published a study and concluded that students use social media as vehicle for sharing and exchanging

knowledge and stressed that YouTube is the most widely accepted social media platform among students.^[5]

In order to make up the loss which the students are facing due to fall in the number of elective surgeries and as a result of limited exposure to surgical procedures in operating room, some high-definition good-quality operative videos can be posted on social media platform like YouTube.

Students can watch these videos, as this will offer a good-quality teaching. These videos can also be visualized in groups on a social media platform, and under the supervision of a faculty, can be followed by question and answer session.^[5,6]

Augestad *et al.* from Department of Postgraduate Surgical Education, University Hospital North Norway, Tromsø, Norway, published a systemic review and meta-analysis in 2020 and established that video-based teachings enhance the technical performance of students.^[7]

Flipped class room concept

In addition to use of social media platform for teaching, flipped classroom concept can also be used. This comprises providing the students planned teaching material in the form of prerecorded video lectures which they can watch before interactive session or conference, enabling students at the time of interactive sessions or conference to engage in application, analysis evaluation, and synthesis of knowledge. Flip class technique has been widely favored by students. Also they can develop a gallery of the videos which they can watch at any time and also repeatedly as per their convenience. Ramnanan *et al.* from University of Ottawa published an article in 2017 and concluded that medical students preferred flipped class room concept in comparison to lecture-based classes.^[8-10]

Telemedicine a substitute for didactic clinic

While in the COVID-19 pandemic social distancing is the main issue most of the elective surgical consultation have been deferred and so clinics have been discontinued, WHO, according to its new policy, recommends to focus on essential health services and adopt alternative models of health care, one such is telemedicine which is being used for support of clinical services.^[3,11]

This concept of telemedicine or telehealth can be utilized as opportunity to train undergraduate surgery students and to enhance their clinical skills by letting them attend the telemedicine clinics linked to surgery, as didactic surgical clinics in pandemic have little or no patient load. In teleclinics surgery, undergraduate students can take part in discussions to plan the management of patient. A patient seeking surgical consultation can be a case for them and they can elicit the history and present to faculty or senior resident available there.^[12]

Also getting accustomed to this concept of telehealth will help these undergraduate medical students, who are future GPs, to apply telemedicine in patient care and patient education.

Multimodal systems for learning basic surgical skills

In order to keep them abreast and to teach them basic surgical skills, as suturing, performing incision and drainage, chest tube insertion, and so on, e-technology can be used in the form of multimodal systems which involve undergraduate medical students to enhance basic surgical skills through visual, auditory, and tactile components.^[13]

Undergraduate students are prospective GPs or primary care physicians, so they should be well trained in basic surgical skills so that they are able to manage the basic surgical problems at initial or primary level.

Discussion

Novel e-based learning approaches proposed in this article can be combined to formulate training modules [Figure 1]. This will allow undergraduate surgery students to gain significant knowledge and basic surgical skills, without the need for organizing in-person classes, and with limited patient care. Each in-person teaching modality can be substituted with novel web-based, distant learning strategy [Table 1].

Also many of these undergraduate students are future GPs or primary care physicians of tomorrow, so after getting accustomed to e-learning technologies, they can use this web-based learning for patient care and patient education.

These e-based learning platforms are easily accessible, hold flexibility of learning, can be updated easily, and offer individualized learning.^[13,14]

Although these platforms have some limitations, such as poor broadband connection, inexperience of students to use this novel technology, and impersonal learning, these challenges can be overcome largely with the help of technical experts. Moreover, with time, efforts, and involvement of more and more faculty and students, gradually all will become familiar to this novel technology.^[6,15]

Conclusion

Social media platforms, concept of telemedicine, flipped classroom concept, and multimodal systems can be of use to role the training of undergraduate surgical students who are future GPs or primary care physicians and can use these e-technologies for patient care and patient education.

Although these virtual technologies can compensate for the gap in training in times of crisis like COVID-19 pandemic, these cannot replace real-time experience of in-person classes and acquiring clinical or surgical skills by getting involved with the patients personally.

Financial support and sponsorship

Nil.

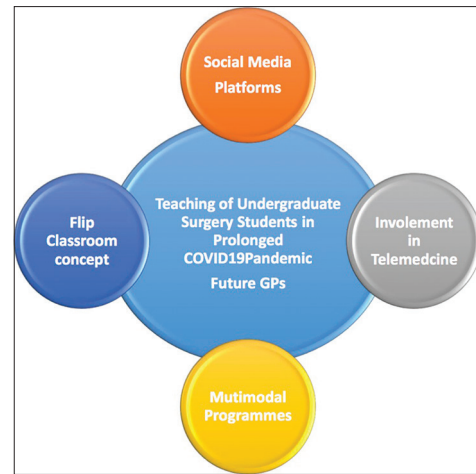


Figure 1: Illustrating collage of strategies as combined approach for teaching of undergraduate surgery students/future primary care physicians in COVID-19 pandemic

Table 1: Displaying proposed web strategy substitute for each in-person modality of teaching for undergraduate surgery students/future primary care physicians during COVID-19 pandemic

DIDACTIC LECTURES AND SEMINARS	DIDACTIC CLINICS AND CASE PRESENTATIONS	HANDS ON BASIC SURGICAL SKILLS IN SKILL LABS & OPERATING ROOMS
<ul style="list-style-type: none"> Social media platforms (FaceBook, Twitter, You Tube) Flip Class room (Team Based Learning) 	<ul style="list-style-type: none"> Inovement of Undergraduate surgery students in Telemedicine Surgical Consultations 	<ul style="list-style-type: none"> Multimodal Computer based Programs High End Surgical Videos

Conflicts of interest

There are no conflicts of interest.

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