Competency-based medical education for postgraduates in the minimally invasive surgery department during the COVID-19 pandemic

The pandemic of COVID-19 has severely disrupted everyone’s lives. The closure of universities has made education uncertain. The same is true for medical education. The more the pandemic spread, the more we realised the importance of medical talent. Therefore, it is imperative to ensure the continuity of medical education. Since the training of clinical postgraduates focuses on contact with patients, the diagnosis and treatment of patients, and the implementation of various clinical operations, they are more affected by the pandemic. Therefore, we just try to find new teaching methods to ensure the cultivation of clinical talents.

A recent article by Crespo et al titled ‘Medical students and COVID-19: lessons learnt from the 2020 pandemic’ elaborates the challenges faced by both medical students and teachers during COVID-19 and experiences and lessons learnt from the pandemic. The education modes and methods should be adjusted to minimise the impact of the pandemic. The Accreditation Council for Graduate Medical Education proposed six core competencies that clinicians need to master: patient care, medical knowledge, practice-based learning and improvement, interpersonal communication and skills, professionalism and system-based practice. During the pandemic, students were unable to rotate in wards and could not directly perform clinical operations, which greatly affected the cultivation of the various abilities of surgical graduate students and put forward new requirements for teachers. E-learning play an important role in restoring the learning process in hospital to the greatest extent and establishing a new model for the cultivation of graduate students’ core competencies during the pandemic.

Patient care mainly relies on the entire diagnosis and treatment process for patients. Using online resources to cultivate the graduates’ abilities to diagnose and treat patients while staying at home is very important. After obtaining patient consent, a web conference through the network video connection let students conduct ‘face-to-face’ consultations with patients via ‘cloud consultation’, which completely simulates on-site teaching in the ward. The instructor conducts the physical examination. The students observe the physical examination and reactions. They can ask the teacher to perform physical examinations of relevant parts or organs; therefore, the students may collect and summarise clinical data for analysis, and make corresponding diagnoses and treatment plans. The teacher will comprehensively evaluate the students’ performance, which may enable students to improve their diagnosis and treatment capabilities gradually. This way, the students can still feel ‘immersed’ at home and fully participate in patients’ clinical activities.

Traditional medical knowledge learning is mainly based on classroom teaching. Teachers play a crucial role in the classroom; it is more direct and easy to observe students’ learning status at any time during classroom teaching. However, due to the impact of the pandemic, all offline courses have been stopped and online methods have been adopted. Therefore, higher requirements have been put forward for online teaching. Teachers need to make more preparations before teaching and give students preparatory tasks as preliminary guidance for the courses to be learnt. Teachers must be proficient in the online teaching model, including course design, the selection of teaching content, interactive methods, and the evaluation of learning effects, and every detail must be meticulous. In order to make teachers better prepared for this new form of virtual learning, the academic affairs department of the hospital has done targeted training, in addition, clinical departments give corresponding teaching guidance considering the characteristics of different departments.

For postgraduates in minimally invasive surgery, training minimally invasive and laparoscopic techniques are essential. Before the pandemic, virtual simulation operating system and a laparoscopic training box used to train laparoscopic techniques such as incisions, suturing and knot tying. Students can complete simple laparoscopic surgery such as laparoscopic cholecystectomy through the virtual simulation operating system and hence can smoothly complete the learning curve. Due to the pandemic, students cannot train on the virtual simulation system. For the particularities of laparoscopy, the techniques are challenging to learn at home. After repeated testing, we designed a simple training system for laparoscopy. The system uses simple materials like old cardboard box to make the training box’s shell and uses a camera of a cellphone or a tablet to assemble a simple training box with little extra cost (figure 1). The laparoscopic equipment including needle holder and forceps from the training centre of the hospital are sent to students’ homes via express delivery. For those without laparoscopic equipment, you can buy them on the shopping website at lower price (about US$30 for a piece of equipment). After the pandemic, you can use them to build your own training centre. Then, instructors guide them through a remote connection and conduct testing to train at home. Also, through the video signal transmission, the real-time video images of the students’ exercises are transmitted to a tutor’s computer screen so that the tutor can make immediate comments. Sometimes, we invite several experts to comment at the same time (figure 2). As a result, we can see clearly the students’ improvement of laparoscopic skills. Furthermore, the instructor can select typical patients, transmit the real-time images of the operation to the students during the operation, and give real-time explanations and answer the students’ questions at any time so that the students can participate in the operation ‘immersively’.

The professionalism of clinicians is an essential part of the professionalisation of medical staff. Professionalisation means the ordinary standards of competence and moral values that clinicians promise to maintain in the profession and what the public and patients can expect of them.
The cultivation of physicians’ professionalism often requires a long process, and the teaching of theories is often not sufficient. Teachers are required to gradually guide students in clinical activities and take the lead to transform from imitating to real. Although students stayed away from hospitals and patients during the pandemic, the spirit of great love displayed by most medical workers during the pandemic is touching. During the fight against the pandemic, medical workers worldwide were not afraid of danger, charged forward, and contributed to the professionalism. With the best annotations, students can truly feel the medical staff’s noble professional ethics and selfless dedication so as to have a higher yearning for their future careers.

Medical students need to have good interpersonal and communication skills to communicate with patients according to their condition as future medical practitioners. Under the influence of the pandemic, students cannot communicate with patients face-to-face, which affects communication skills. To develop communication skills in this extraordinary period, after receiving patient consent, we broadcast the communication between doctors and patients live through web conferences to the students so that they can communicate with patients in real time. Before communicating, we introduce the patient’s data to the student. It is necessary for each student to do a detailed review, communicate with the instructor, understand the main diagnosis and treatment of the patient,. After the communication, the instructor comments on the communication process and gives timely feedback. The teacher pays attention to all the details, including the comprehensive analysis of the students’ pronunciation and intonation, language ability, on-the-spot response, humanistic care, and so on, to help students improve rapidly.

To sum up, affected by the large-scale outbreak of the new coronavirus, clinical medicine postgraduates’ training is facing great difficulties. Although measures taken to combat the pandemic are one of the most important objectives to control the spread of the disease, if postgraduates’ training becomes stagnant or the quality is low, it will directly affect students’ future careers. New teaching methods based on ability training ensure the quality of postgraduates’ training during the pandemic. We should make sure that the training of medical talents is not left behind during the COVID-19 pandemic and provide a guarantee that students can start their careers smoothly in the future and continue to convey talent to hospitals.

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