RESEARCH ARTICLE

Ripple effects of COVID-19 lockdown pertaining to clinical skills among undergraduate medical students of Karachi

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Abstract

Objective: To determine the outcomes of coronavirus disease-2019 lockdown pertaining to clinical skills among undergraduate medical students.

Method: The cross-sectional questionnaire-based study was conducted after approval from the Jinnah Sindh Medical University, Karachi, at 6 public and private medical education institutions in Karachi from July 3 to August 3, 2021, and comprised undergraduate students from the 3rd, 4th and final academic years. Data was collected using a pre-designed questionnaire. Data was analysed using SPSS 20.

Results: Of the 383 subjects, 260(67.9%) were females and 123(32.1%) were males. The overall age range was 20-25 years. There were 145(37.9%) students from the 3rd year, 154(40.2%) from 4th and 84(21.9%) from the final year. Among them, 251(84.2%) accepted having decreased efficiency in clinical skills because they were not being able to train in person, 157(41%) claimed that certain topics related to clinical study were given in exams even though they were not taught, and 164(72.6%) faced difficulty in exams related to clinical skills.

Conclusion: Coronavirus disease-2019 caused disruption in routine life, and medical education was not an exception. E-learning modality was found to be insufficient, and patient exposure elevates confidence, eliminates hesitation, and improves clinical skills.

Keywords: COVID-19, Clinical skills, Undergraduate medical students. (JPMA 73: 53; 2023)

DOI: https://doi.org/10.47391/JPMA.8076

Introduction

The pneumonia outbreak amid normal life in the Wuhan city of China in late December of 2019 was scrutinised and later confirmed by the Centres for Disease Control and Prevention (CDC) as having been caused by novel coronavirus. The new variant was called the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), and the resultant disease, called the coronavirus disease-2019 (COVID-19), was declared a pandemic on March 11, 2020.[1]

Many precautions were taken to restrain people from contracting the highly communicable, contagious disease. One measure that ultimately impeded every work, each person's routine, and bound people to the home was the lockdown. This seemed necessary to restrain people from contracting the virus. The impact of lockdowns and social distancing was remarkably significant on medical education with regard to hands-on procedures, history-taking, clinical examinations, case presentations, hospital visits, and patient exposure, etc. These skills are grasped inch by inch in the last three academic years.[2]

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Submission complete: 21-10-2022 **Review began:** 17-11-2022

Acceptance: 23-09-2023 **Review end:** 15-07-2023

Tele-learning looks good enough broadly, but when it comes to medical education at the undergraduate level, it can never replace clinical skills that are learnt through patient exposure. Psychomotor skills in terms of clinical practice are least attainable via e-learning. Declined self-assurance, low level of confidence and professional competency to cope up with the actuality of professional life can be an acute outcome among future doctors if no measures are taken to cement the gap generated by COVID-19 lockdowns on clinical skills of undergraduate medical students.

Surgical ward rotation in the final three years plays a remarkable role in hand-picking a surgical career. The halt in surgical rotations can tail off the fascination towards surgery as a career choice.[3]

Medical students have showcased concern about inadequate clinical skills during COVID-19 lockdowns around the globe.[4] The current study was planned to determine the impact of COVID-19 lockdowns on the clinical skills of undergraduate medical students.

Subjects and Methods

The cross-sectional questionnaire-based study was conducted from July 3 to August 3, 2021, after approval from the Jinnah Sindh Medical University (JSMU), Karachi, at 6 public and private medical education institutions in

Karachi, and comprised undergraduate students from the 3rd, 4th and final academic years. Students of the 1st and 2nd years as well as non-medical undergraduates were excluded. Data was collected using a predesigned 19-item questionnaire.

The sample size was calculated via OpenEpi[2] with confidence level 95%, and hypothesized frequency of outcome factor in population (p) 46.4%. Absolute precision value (d) was 5%. Non-probability convenience sampling technique was employed.

The online questionnaire was generated via Google Forms and was distributed to the participating institutions using various messaging applications. A pilot study was done to check the efficacy of the questionnaire which resulted in Cronbach's alpha value of 0.785, indicating its reliability. The questionnaire included an informed consent form which was signed by all the subjects. Participation was voluntary and it hardly took 15-20 minutes to fill the questionnaire. For maintaining anonymity, no personal questions, like participants' name, institution, were asked.

The question types included multiple choices that were answered on a six-point Likert scale, as well as open-ended questions. The questionnaire gathered demographic data, like gender, age, year of study and the public or private orientation of the institution, and students' perception about the impact of COVID-19 on their education both in terms of theoretical and clinical skills (Annexure).

Annexure: The study questionnaire

Dear participant,

We the students of M.B.B.S from Sindh Medical College (Jinnah Sindh Medical University) are doing a cross sectional questionnaire based study to know the impact of COVID-19 lockdown on clinical skills of M.B.B.S students. If you are an M.B.B.S student from Third year to Final year then you are most welcome to voluntarily participate in this survey. It will hardly take 5-10 minutes. For maintaining anonymity of respondent, no personal information will be asked so that freedom of choice and words is ensured.

Your provided response will remain confidential.

* Required

Email*: .....

Your email: .....

Gender*

a. Male b. Female

College/University in which you are enrolled is: * .....

.....

☐ Public sector ☐ Private sector

Year of study: *

☐ Third year ☐ Fourth year ☐ Final year

Age (years):* ☐ < 20 ☐ 20-25 ☐ >25

1) Do you think that Medical Education heavily relies on clinical skills or its all about having good theoretical concepts? *

☐ Relies solely on clinical skills ☐ Relies solely on theoretical concepts ☐ Relies on both factors

2) Was your clinical training suspended during the pandemic? *

☐ Yesb. ☐ No

3) What were the number of days of each posting before this pandemic? *

☐ 7 days ☐ 10-15 days ☐ 15-30 days ☐ More than 30 days

4) What have been the number of days of your each posting during this pandemic? *

☐ 7 days ☐ 10-15 days ☐ 15-30 days ☐ More than 30 days

5) Are you worried about being exposed to COVID during your clinical training? *

☐ Yes ☐ No ☐ Not sure

6) Do you think that clinical skills can be taught to medical students online? *

☐ Yes ☐ No ☐ Not sure

If yes to question no 6, then give an appropriate reason

7) Was the clinical study part of your last appeared exam? *

☐ Yes ☐ No ☐ Not sure

If yes to question no 7, then answer the following question

Did you face difficulty in exams in terms of clinical skills?

☐ Yes ☐ No ☐ Not sure

8) Do you think your confidence level has declined with respect to patient exposure? *

☐ Yes ☐ No ☐ Not sure

9) What is the importance of patient interaction in your opinion? *

10) Are you facing difficulty in differential diagnosis of cases due to lack of ward rotation in lockdown?*

Strongly disagree ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Strongly agree

11) Have you got lack of interest in surgery due to no exposure to surgical units? *

☐ Yes ☐ No ☐ Not sure

12) Do you think you'll face difficulty in your professional life due to lack of clinical practice in lockdown? *

☐ Yes ☐ No ☐ Not sure

13) Did you participate in any electives during the pandemic? *

☐ Yes ☐ No

14) How would you rate your following clinical skills on 0-5 scale

Blood pressure measurement *

Doesn't apply to me yet ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Highest level of confidence

Pulse *

Doesn't apply to me yet ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Highest level of confidence

History taking *

Doesn't apply to me yet ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Highest level of confidence

GPE (General Physical Examination) *

Doesn't apply to me yet ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Highest level of confidence

Systemic Examination *

Doesn't apply to me yet ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Highest level of confidence

Administration of Injections *

Doesn't apply to me yet ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Highest level of confidence

IV Therapy *

Doesn't apply to me yet ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Highest level of confidence

NG Tube placement (Nasogastric intubation) *

Doesn't apply to me yet ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Highest level of confidence

Catheter placement/insertion *

Doesn't apply to me yet ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Highest level of confidence

Interpretation of lab test results *

Doesn't apply to me yet ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Highest level of confidence

Interpretation of X-Rays, CT Scan, MRI *

Doesn't apply to me yet ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Highest level of confidence

15) Has the pandemic made any negative impact on your ratings for above mentioned clinical skills? *

☐ Yes ☐ No ☐ Not sure

If "YES" to question number 15, then answer following question.

What are some of the influencing factors? (you can choose more than one option)

☐ Online classes or no classes ☐ No interaction with peers

☐ No clearing of doubts ☐ Not being able to train physically

☐ Not being provided with adequate material

SUBMIT

Data was analysed using SPSS 20. Chi-square test was used for inferential analysis, and the potential association between independent and dependent variables was explored.

Results

Of the 400 students approached, 383(95.75%) responded; 260(67.9%) females and 123(32.1%) males. The overall age range was 20-25 years. There were 145(37.9%) students from the 3rd year, 154(40.2%) from 4th and 84(21.9%) from the final year. 288 (75.2%) of the participants were enrolled in public sector medical universities and 95 (24.8%) were from private sector medical universities.

Overall, 343(89.6 %) students agreed that medical education relies heavily on good theoretical concepts as well as clinical skills, 363(94.6%) had their clinical rotation suspended during the pandemic, and 256(66.8%) were worried about being exposed to COVID-19. 253 (66.1%) students had their clinical posting for 15-30 days before the pandemic, which was reduced to 10-15 days during the pandemic.

Regarding the students' perception of whether clinical skills could be taught online, 328(85.6 %) believed that it cannot be done, 251(84.2%) accepted having decreased efficiency in clinical skills because they were not being able to train in person, 157(41%) claimed that certain topics related to clinical study were given in exams even though they were not taught, and 164(72.6%) faced difficulty in exams related

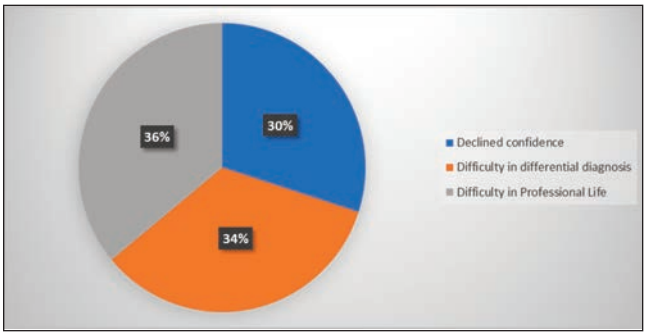

Figure-1: Depiction of coronavirus disease-2019 (COVID-19) impact.

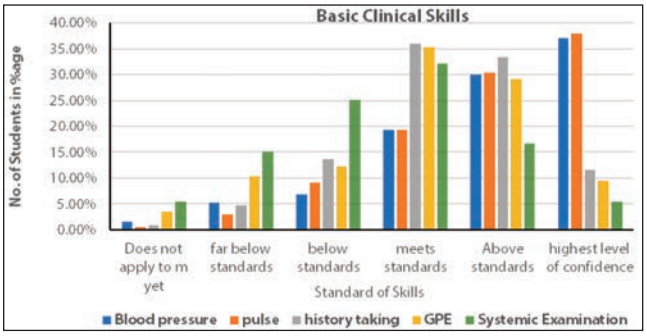

Figure-2: Interpretation of basic skills.

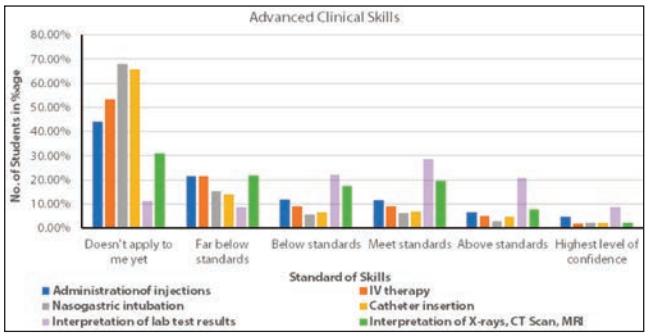

Figure-3: Interpretation of advanced clinical skills.

to clinical skills. Only 39(10.2%) students participated in any elective during the lockdown phase.

The overall impact of COVID-19 on medical undergraduate education (Figure-1), especially basic (Figure-2) and advanced (Figure-3) clinical skills were noted.

Discussion

The COVID-19 pandemic and subsequent lockdowns affected people from all walks of life.[5] While a major crisis in the health sector was taking place, different steps were taken in order to make sure that the disruption of normal routine life was minimal. One such measure was the shifting of education from physical to online classes.[6] While this played a major role in decreasing the loss of precious time, it was still a new concept in lare parts of the globe, including Pakistan, and took a lengthy phase of trial and error as it seemed unrealistic to teach practical skills through online lectures.[7] Comprehending the conveyed content emerged as a challenge in e-learning.[8]

The current study found that during the pandemic and subsequent lockdowns a vast majority of students had their clinical rotations suspended, and the days of their rotations thereby got significantly reduced.[9] Cognitive content has been lessened in terms of grasping skills.[10] Students were also markedly worried about being exposed to COVID-19 during their clinical training.[11]

The current study also explored students' opinions towards major challenges they faced during the experience of learning online and if such clinical skills could be taught online. A large majority disagreed. Students also admitted of facing difficulty in their last appeared exams in relation to clinical skills. Internet access also emerged as a significant hurdle. Most of the students agreed that the pandemic resulted in a decreased confidence in terms of clinical skills. These findings were in line with relevant literature.[12-14]

The results also showed that most students were moderately confident in their basic clinical skills, but there was decreased confidence in specialised clinical skills.[15]

They also showed less interest in surgery, due to suspended surgical postings. Remote education of surgical procedures seems just about impossible.[16,17] Undergraduate medical students suffered a lot due to lockdowns. They had no interaction with peers, no clearing of doubts, and were not being provided with adequate learning material as the e-learning modality was new to students as well as to the teachers.[18]

Patient interaction is the core of the medical profession. All clinical examinations are best acquired when attained via tactile method.[19] It is crucial to gain experience and implement theoretical knowledge.[20] By reading medical books only, a medical student can never become an efficient doctor.[21] Patient exposure gives crystal clear picture of clinical scenarios and is important to build rapport. Patient exposure and practice of clinical skills leads to stronger concepts and better learning.[22] In ward postings, students get to know that how a patient perceives the symptoms related to a disease. Medical students should know all the measures of infection control and for this they need ward exposure.[23] The interpersonal skills and social intelligence get enhanced when a medical student is acquainted with the environment and learn how to approach a patient in a proper manner, and this is essential to establish a high-quality healthcare system.[24] An exam based on inspection, palpation, percussion and auscultation can never be mastered via e-learning. Without going to the ward on a daily basis, a doctor cannot be competent enough to deal with the actuality of professional life. Patient exposure elevates confidence, eliminates hesitation, and improves clinical skills.[25]

COVID-19 restrictions created problems in the current study's data collection process as well. This was the reason that the study had to be conducted online.

In the light of the findings, it is recommended that efforts should be made by educational institutions to solve the issues faced by the students. This can be done by ensuring clinical exposure along with standard operating procedures (SOPs), making vaccination mandatory, holding workshops on clinical skills and interactive sessions with teachers after regular academic hours to mitigate the loss of learning, and modifying the timings of ward posting and calling fewer students at a time. Besides, no final examination should be conducted until and unless the clinical skills of that year have been taught to the relevant students.

Conclusion

COVID-19 caused disruption in routine life, and medical education was not an exception. E-learning modality was found to be insufficient, and patient exposure elevates confidence, eliminates hesitation, and improves clinical skills.

Disclaimer: None.

Conflict of Interest: None.

Source of Funding: None.

References

1. Dong E, Du H, Gardner L. An interactive web-based dashboard to track COVID-19 in real time. Lancet Infect Dis 2020;20:533-4. doi: 10.1016/S1473-3099(20)30120-1.
2. Dean AG, Sullivan KM, Soe MM. OpenEpi: Open Source Epidemiologic Statistics for Public Health, Version: 3.01. [Online] 2013 [Cited 2023 September 23]. Available from URL: https://www.openepi.com/Menu/OE_Menu.htm.
3. Khan S, Mian A. Medical education: COVID-19 and surgery. Br J Surg 2020;107:e269. Doi: 10.1002/bjs.11740.
4. Baticulon RE, Sy JJ, Alberto NRI, Baron MBC, Mabulay REC, Rizada LGT, et al. Barriers to Online Learning in the Time of COVID-19: A National Survey of Medical Students in the Philippines. Med Sci Educ 2021;31:615-26. doi: 10.1007/s40670-021-01231-z.
5. Baqir SM, Mustansir F. Online Medical Education and Examinations during COVID-19: Perspectives of a Teaching Associate. J Coll Physicians Surg Pak 2021;31:s16-8. doi: 10.29271/jcpsp.2021.Supp1.S16.
6. Diaz MCG, Walsh BM. Telesimulation-based education during COVID-19. Clin Teach 2021;18:121-5. doi: 10.1111/tct.13273.
7. Seymour-Walsh AE, Bell A, Weber A, Smith T. Adapting to a new reality: COVID-19 coronavirus and online education in the health professions. Rural Remote Health 2020;20:6000. doi: 10.22605/RRH6000.
8. Khalil R, Mansour AE, Fadda WA, Almisnid K, Aldamegh M, Al-Nafeesah A, et al. The sudden transition to synchronized online learning during the COVID-19 pandemic in Saudi Arabia: a qualitative study exploring medical students' perspectives. BMC Med Educ 2020;20:285. doi: 10.1186/s12909-020-02208-z.
9. Mortagy M, Abdelhameed A, Sexton P, Olken M, Hegazy MT, Gawad MA, et al. Online medical education in Egypt during the COVID-19 pandemic: a nationwide assessment of medical students' usage and perceptions. BMC Med Educ 2022;22:218. doi: 10.1186/s12909-022-03249-2.
10. Kapoor A, Kapoor A, Charokar K, Mishra A, Motagi MV, Sadawarte SK. A Faculty survey about online teaching during early lockdown period of COVID-19 pandemic in a medical college in central India. Chrismed J Health Res 2020;7:265-70. DOI: 10.4103/cjhr.cjhr_115_20.
11. Alsoufi A, Alsuyihili A, Msherghi A, Elhadi A, Atiyah H, Ashini A, et al. Impact of the COVID-19 pandemic on medical education: Medical students' knowledge, attitudes, and practices regarding electronic learning. PLoS One 2020;15:e0242905. doi: 10.1371/journal.pone.0242905.
12. Ray JM, Wong AH, Yang TJ, Buck S, Joseph M, Bonz JW, et al. Virtual Telesimulation for Medical Students During the COVID-19 Pandemic. Acad Med 2021;96:1431-5. doi: 10.1097/ACM.0000000000004129.
13. Choi B, Jegatheeswaran L, Minocha A, Alhilani M, Nakhoul M, Mutengesa E. The impact of the COVID-19 pandemic on final year medical students in the United Kingdom: a national survey. BMC Med Educ 2020;20:206. doi: 10.1186/s12909-020-02117-1.
14. Naciri A, Radid M, Kharbach A, Chemsi G. E-learning in health professions education during the COVID-19 pandemic: a systematic review. J Educ Eval Health Prof 2021;18:27. doi: 10.3352/jeehp.2021.18.27.

15. Almomani EY, Qablan AM, Atrooz FY, Almomany AM, Hajjo RM, Almomani HY. The Influence of Coronavirus Diseases 2019 (COVID-19) Pandemic and the Quarantine Practices on University Students' Beliefs About the Online Learning Experience in Jordan. Front Public Health 2021;8:e595874. doi: 10.3389/fpubh.2020.595874
16. Dattani R, Morgan C, Li L, Bennett-Brown K, Wharton RMH. The impact of COVID-19 on the future of orthopaedic training in the UK. Acta Orthop 2020;91:627-32. doi: 10.1080/17453674.2020.1795790.
17. Cassioli F, Fronda G, Balconi M. Human-Co-Bot Interaction and Neuroergonomics: Co-Botic vs. Robotic Systems. Front Robot AI 2021;8:e659319. doi: 10.3389/frobt.2021.659319.
18. Kaul V, Gallo de Moraes A, Khateeb D, Greenstein Y, Winter G, Chae J, et al. Medical Education During the COVID-19 Pandemic. Chest 2021;159:1949-60. doi: 10.1016/j.chest.2020.12.026.
19. Abbasi MS, Ahmed N, Sajjad B, Alshahrani A, Saeed S, Sarfaraz S, et al. E-Learning perception and satisfaction among health sciences students amid the COVID-19 pandemic. Work 2020;67:549-56. doi: 10.3233/WOR-203308.
20. Bliss J. The impact of COVID-19 on practice learning in nurse education. Br J Community Nurs 2021;26:576-80. doi: 10.12968/bjcn.2021.26.12.576.
21. Hammond D, Louca C, Leeves L, Rampes S. Undergraduate medical education and Covid-19: engaged but abstract. Med Educ Online 2020;25:1781379. doi: 10.1080/10872981.2020.1781379.
22. Singh A. The Impediment in Acquiring Clinical Skills by Medical Students during the COVID-19 Pandemic. JNMA J Nepal Med Assoc 2021;59:98-9. doi: 10.31729/jnma.5559.
23. Hussein NR, Saleem ZSM, Musa DH, Ibrahim N, Naqid IA. Impact of COVID-19 on the Medical Education: Experience from Kurdistan Region of Iraq. J Med Edu 2020;19:e106889. Doi: 10.5812/jme.106889.
24. AlAzzam M, Abuhammad S, Abdalrahim A, Hamdan-Mansour AM. Predictors of Depression and Anxiety Among Senior High School Students During COVID-19 Pandemic: The Context of Home Quarantine and Online Education. J Sch Nurs 2021;37:241-8. doi: 10.1177/1059840520988548.
25. George G, Thomas RM. Quarantined effects and strategies of college students-COVID-19. Asian Educ Dev Stud 2020;10:565-73. Doi: 10.1108/AEDS-04-2020-0054.

Author Contribution:

AS: Study design and concept, data interpretation, final approval before publication.
MA: Literature search, questionnaire design, data collection, critical revision.
AU: Data collection, data interpretation, drafting.
MK: Data analysis, questionnaire design.
MAH: Study concept, data analysis.
UAK: Literature search, data analysis.