



Perception and Attitudes of Medical Students on Emergency Medicine Course in the Era of the Coronavirus Disease 2019 at the Faculty of Medicine, Suez Canal University

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Abstract

Introduction: The COVID-19 pandemic has significantly impacted international healthcare systems and medical school programs, necessitating an increase in the number of requests for medical students to serve as primary healthcare practitioners.

Aim: The study aimed to improve the quality of emergency medicine education amidst the COVID-19 pandemic and alike.

Methods: A cross-sectional survey of the opinion of undergraduate and postgraduate medical students on emergency medicine education during the COVID-19 pandemic. A survey consisting of three fields and fourteen items was administered to assess the self-assessed perceptions and attitudes of 290 medical students regarding clerkship training in hospital practice during the COVID-19 pandemic.

Results: Depending on whether they had enrolled in the clinical clerkship course, the 290 medical students who responded to the survey were split into two groups. 150 (51.7%) students were in the fourth and sixth-year pre-clerkship group, while 140(48.3%) students were postgraduate. The mean age of the participants was (23.5 ± 1.8 years), 64.8% were males and 35.2% were females. (51.3%) believed that their knowledge of COVID-19 was 'above average' or 'far above average'. During the clerkship training, students' perception of the SARS-CoV-2 transmissibility was higher (53.5%). (5.2%) students were not satisfied with the postponement of the academic calendar due to the COVID-19 pandemic. Although the students were concerned that the virus could spread during clinical clerkship training (68.4%), (1.7%) of their families were not concerned and 58.6% of students found the quality of training would be reduced due to COVID and 41.3% found their experience will be increased. More than two-thirds (75.9%) of the medical students surveyed believed that the postponed academic calendar had a significant impact on their way of life. The majority of students believed that in cases where the clinical clerkship training was changed to an online class at home, participation in or understanding of the class would be significantly reduced.

Conclusion: In situations like the COVID-19 pandemic, medical students should be allowed to actively participate in hospital practice while adhering to stringent safety protocols aimed at

preventing viral infection and transmission. This can be achieved by developing educational strategies for clinical clerkship training.

Keywords: COVID-19, Knowledge, Attitude, Perception.

Introduction

The global medical community is now under a great deal of strain due to the Coronavirus Disease 2019 (COVID-19). The status of the disease has changed from "epidemic" to "pandemic" since the outbreak of this novel infectious disease caused by severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) in Wuhan, China, in late 2019, placing nations on high alert regarding this threat to their national public health ^[1,2]. Numerous nations have committed all of their resources to treating COVID-19 positive people medically, stopping the virus's transmission and community infection, and implementing formal social activity limitations based on quarantines ^[3]. However, until an approved antiviral treatment regimen and a COVID-19 vaccine are developed, it is unrealistic to expect a reduction in the virus itself or a reduction in the increased healthcare burden, despite countries' intense efforts to implement these healthcare measures ^[4,5]. Countries where this pandemic is expected to persist may find it difficult to manage their healthcare systems because of a lack of medical staff, facilities, and/or equipment.

It has recently been acknowledged that one of the most significant issues during the COVID-19 epidemic is the availability of hospital-based positions for medical students ^[6,7]. Rearranging the medical school calendar has a significant impact on the COVID-19 pandemic's present state.

Egypt's colleges and universities were shuttered in March 2020 in an effort to stop the coronavirus from spreading as the number of cases rises. It was inevitable that direct training on campus or in a hospital would give way to online courses and remote learning.

Additionally, medical schools have received instructions from the Association of American Medical Colleges (AAMC) to halt student clerkships ^[8]. The Korean Association of Medical Colleges (KAMC) subsequently stated that medical colleges could reschedule and become more flexible to enable the education of students participating in clerkship programs at training hospitals while adhering to safety guidelines regarding COVID-19 infection and transmission ^[9]. This was due to the unique characteristics of the curriculum at medical colleges. Despite the fact that these suggestions prioritize student safety during the COVID-19 pandemic, it is thought that they fall short of accurately reflecting the views of medical students about clinical clerkship programs. It is critical to comprehend medical students' perspectives and worries about their clerkship experience in a hospital environment, particularly in light of current events like the COVID-19 outbreak. Furthermore, it is crucial to take into account educational practices including creating new student-patient contact channels, developing alternate clerkship programs, and redefining the duties of medical students.

Aim of the Study

The aim of this study was to improve the quality of emergency medicine education amidst the COVID-19 pandemic and alike.

Objectives

Primary Objective

This study aimed to assess the perceptions and attitudes of undergraduate and postgraduate medical students regarding the changes to clinical training programs in Egypt during the COVID-19 pandemic.

Secondary Objectives

- To assess students' knowledge and perception about COVID-19.
- To assess the impact of the change in academic calendar on students' lifestyle in the COVID-19 pandemic.

Research Questions

- What is the opinion of undergraduate and postgraduate emergency medicine students on emergency medicine education in COVID-19 pandemic?
- What is the knowledge and perception of undergraduate and postgraduate emergency medicine students about COVID-19?
- What is the students' perception of the impact of the change in academic calendar on students' lifestyle in the COVID-19 pandemic?

Subjects & Methods

Study Design:

A cross sectional survey of the opinion of undergraduate and postgraduate medical students on emergency medicine education in COVID-19 pandemic.

Study setting:

Emergency Medicine Department, Faculty of Medicine, Suez Canal University

Study Population:

Undergraduate students at the Faculty of Medicine, Suez Canal University (FOMSCU) and postgraduate students at the Emergency Department (FOMSCU).

- Inclusion Criteria:
 1. Students of both sexes, who were at year 4 and year 6 at the Faculty of Medicine, Suez Canal University during 2020.
 2. Postgraduate students of master's degree program, Doctorate Degree program and the Egyptian Fellowship program during 2020 at the Emergency Department, FOMSCU.
- Exclusion Criteria:

Students who did not attend the Emergency Medicine course for any reason (sick leave, skip year, ...)

Sampling

Sample size

Sample size calculated according to the following formula

$$n = \left[\frac{Z_{\alpha/2}}{E} \right]^2 * P(1 - P) \quad [10]$$

Where:

n = required sample size,

$Z_{\alpha/2} = 1.96$ (The critical value that divides the central 95% of the Z distribution from the 5% in the tail)

P = prevalence of acceptance of online learning is expected to be 21.9 % [11]

$E = 0.05$ (margin of error= width of confidence interval)

The number of sample size will be 264 participants.

The expected non-response rate is considered 10% based on similar studies. The number of participants is 290 participants.

Sampling procedure

Students enrolled in the years 4th and 6th of the Suez canal Medical college; the years emergency medicine is part of their curriculum; will be invited to participate, also post graduate students enrolled in the emergency department.

Methods:

A questionnaire was given to participants in order to assess medical students' opinions of clinical clerkship instruction during the COVID-19 pandemic from the perspectives of both future healthcare providers and college students [9]. The following three fields made up the study questionnaire: Three questions address students' knowledge and perception of COVID-19; six questions address students' attitudes toward clinical clerkship training during the pandemic; and four questions address how the academic calendar change brought on by the pandemic affected students' routines and way of life.

The questions assessing self-assessed knowledge of COVID-19 and risk perception about the possibility of catching the new coronavirus during clinical clerkship training were fully completed by enrolled students. Students' willingness to engage and worries about qualitative changes in the clinical clerkship were examined by the questions they answered on their views toward clinical clerkship training during the COVID-19 pandemic. In addition, we assessed their responses about how the academic calendar modifications affected the students' lifestyles by taking into account the efficacy of home-based online learning as well as the extent and importance of these changes in lifestyle. To help in categorizing the participants' responses, closed-ended questions made up the majority of the surveys. Questions were scored based on a five-point Likert scale. The present study was approved by the **faculty of medicine research ethics committee**.

Statistical analysis

All data were displayed in raw numbers with percentages and estimated the mean and standard deviation values. All analyses were performed using SPSS version 25 software for Windows (SPSS Inc., Chicago, IL, USA).

Results

In Table 1, the participants' baseline characteristics are compiled. Depending on whether they had enrolled in the clinical clerkship course, the 290 medical students who responded to the survey were split into two groups. 150 (51.7%) students were in the fourth- and sixth-year pre-clerkship

group, while 140 (48.3%) students were post graduate. The mean age of the participants was (23.5 $\pm$ 1.8 years), 64.8% were males and 35.2% were females

Table 1: Demographic characteristics of the study participants.

Variables	(n=290)
Age (years)	23.5 $\pm$ 1.8
Gender	
Male	188(64.8%)
Female	102(35.2%)
Student year	
4 rd and 6 th year	150(51.7%)
Post graduate	140(48.3%)

In table 2, (51.3%) believed that their knowledge of COVID-19 was ‘above average’ or ‘far above average. During the clerkship training, students’ perception of the SARS-CoV-2 transmissibility was higher 53.5%.

Table 2: Knowledge and perception about COVID 19 of the study participants.

Question	
How much do you think you know about the COVID-19?	
Far below average	4 (1.4%)
Below average	8 (2.8%)
Average	132 (45.5%)
Above average	118 (40.6%)
Far above average	28 (9.7%)
Do you think SARS-CoV-2 can spread from patients to students during clinical clerkship course?	
Definitely not	7 (2.4%)
Probably not	8 (2.8%)
Unsure	120 (41.3%)
Probably yes	140 (48.3%)
Definitely yes	15 (5.2%)
Do you think SARS-CoV-2 can spread from students to patients during clinical clerkship course?	
Definitely not	3 (1%)
Probably not	9 (3.1%)
Unsure	134 (46.2%)

Probably yes	141(48.7%)
Definitely yes	3 (1%)

Table 3. (5.2%) students were not satisfied with the postponement of the academic calendar due to the COVID-19 pandemic. Although the students were concerned that the virus could spread during clinical clerkship training (68.4%), (1.7%) of their families were not concerned and 58.6% of students found quality of training will be reduced due to COVID and 41.3% found their experience will be increased.

Table 3: **Attitude toward COVID 19 of the study participants.**

Question	
Have you been notified by Medical College about a change in academic calendar due to COVID-19?	
yes	212(73.1%)
Are you satisfied with changed academic calendar due to COVID-19?	
Very dissatisfied	7(2.4%)
Dissatisfied	8(2.8%)
Unsure	70(24.1%)
Satisfied	110(37.9%)
Very satisfied	95(32.8%)
Do you think SARS-CoV-2 can spread from students to patients during clinical clerkship course?	
Yes	198(68.3%)
What are your family's concerns about your clinical clerkship training in the COVID-19 pandemic?	
Not at all concerned	5(1.7%)
Slightly concerned	10(3.5%)
Somewhat concerned	60(20.6%)
Moderately concerned	115(39.7%)
Extremely concerned	100(34.5%)
Do you think the quality of clinical clerkship training will be reduced by the COVID-19 pandemic?	
Definitely not	23(8%)
Probably not	18(6.2%)
Unsure	79(27.2%)
Probably yes	98(33.8%)
Definitely yes	72(24.8%)
Do you think you may have various experiences in clinical clerkship training during the COVID-19 pandemic?	
Definitely not	28(9.7%)

Probably not	13(4.5%)
Unsure	129(44.5%)
Probably yes	80(27.5%)
Definitely yes	40(13.8%)

More than two thirds (75.9%) of the medical students surveyed believed that the postponed academic calendar had a significant impact on their way of life. The majority of students believed that in cases where the clinical clerkship training was changed to an online class at home, participation in or understanding of the class would be significantly reduced (Table 4).

Table 4: Impact of a change in academic calendar on lifestyle in the COVID-19 pandemic of the study participants.

Question	
How much did a change in the academic calendar affect your lifestyle by COVID-19 pandemic?	
Insignificant	13 (4.5%)
Minor	8 (2.8%)
Moderate	129 (44.5%)
Major	110 (37.9%)
Severe	30 (10.3%)
How significant did a change in the academic calendar affect your lifestyle by COVID-19 pandemic?	
Very negative	7 (2.4%)
Negative	8 (2.8%)
Neutral	70 (24.1%)
Positive	110 (37.9%)
Very positive	95 (32.8%)
Do you think class participation will increase, if the current class is replaced with an online class at home?	
Definitely not	132 (45.5%)
Probably not	118 (40.6%)
Unsure	28 (9.7%)
Probably yes	4 (1.4%)
Definitely yes	8 (2.8%)
Do you think the class will be better understood, if the current class is replaced with an online class at home?	
Definitely not	128(44.1%)
Probably not	115(39.7%)
Unsure	25(8.6%)
Probably yes	10 (3.4%)

Definitely yes

12 (4.2%)

Discussion

Despite the COVID-19 pandemic, the majority of medical students in this cross-sectional analysis, demonstrated a commitment to clinical clerkship training with the understanding that it cannot be substituted with any class and that they must participate as a preliminary healthcare provider. In the past, such as during the 2003 SARS outbreak caused by the SARS-associated coronavirus and the 2015 Middle East Respiratory Syndrome (MERS) outbreak caused by the MERS coronavirus, temporary and localized measures such as alterations to the academic schedule or partial school closures were put in place ^[9]. But the COVID-19 pandemic that is currently sweeping the globe is considerably more dangerous and is upsetting educational systems all across the world ^[12]. University administrators have delayed academic calendars and suggested alternate education options while the COVID-19 outbreak has persisted. These policies, such as those put in place by the National Ministry of Education, neglect to take into account the unique characteristics of medical education courses and the attitudes of students toward clinical clerkship in favor of focusing on student safety and the prevention of COVID-19 transmission. In light of this, the study's findings can recommend elements that university administrators should give top priority when deciding what policies to implement for medical education in hospital settings.

Despite worries that clerkship training during the COVID-19 epidemic may transmit the virus, the majority of medical students in this poll had a good impression of hospital practices at this time. This highlights how crucial it is for students to finish their coursework on time since clinical clerkship training is a valuable experience. Furthermore, by intending to participate in the COVID-19 situation as a first responder rather than merely a student, they were able to reinforce their identities as physicians. It's also noteworthy that most students said that they would be interested in taking part in clinical clerkship training.

Concerns regarding SARS-CoV-2 transmission from patients to clerkship students during the COVID-19 pandemic and the lower quality of clinical clerkship instruction seemed to affect the pre-clerkship group more than the clinical clerkship group. These outcomes are probably caused by the fact that pre-clerkship students haven't had a chance to observe different clinical approaches to infection prevention and control in a hospital.

Olaimat et al., reported that 69.1% of students showed a positive attitude towards the seriousness of COVID-19 ^[13]. Furthermore, in a study on knowledge, attitudes, and practices of medical students regarding COVID-19 in Afghanistan, it was reported that the majority (91%) believed that COVID-19 was a serious disease ^[14].

Similarly, Sultan et al. medical students surveyed at Suez Canal University, Egypt, reported that 83% of students agreed that COVID-19 is life-threatening, 76.3% recognized the risk of infection during ward rotations, while only 33.9% believed that being a medical student increased their susceptibility ^[15]. In addition, Hussein et al. surveyed medical students at Ain Shams University, Egypt, and found that approximately 92% agreed/strongly agreed that the disease is serious, but only 38.8% thought that they are at higher risk of being infected than other people ^[16].

The majority of medical students who participated in this survey stated that the academic calendar's delay owing to COVID-19 had a detrimental impact on their lifestyles.

On the other hand, COVID-19 would place numerous limitations on social interactions outside of training, even in the event that clerkship training continued as normal. Students believed that if online courses were to replace the existing academic calendar, they would be able to participate and understand the classes would be poor. However, previous studies have shown that online classes were as useful, effective, and even as enjoyable as traditional didactics ^[17].

Conclusion

In situations like the COVID-19 pandemic, medical students should be given the opportunity to actively participate in hospital practice while adhering to stringent safety protocols aimed at preventing viral infection and transmission. This can be achieved by developing educational strategies for clinical clerkship training.

References:

1. **Ahn DG, Shin HJ, Kim MH, Lee S, Kim HS, Myoung J, et al.** Current Status of Epidemiology, Diagnosis, Therapeutics, and Vaccines for Novel Coronavirus Disease 2019 (COVID-19). *J Microbiol Biotechnol* [Internet]. 2020;30(3):313–24.
2. **Nguyen HC, Nguyen MH, Do BN, Tran CQ, Nguyen TTP, Pham KM, et al.** People with Suspected COVID-19 Symptoms Were More Likely Depressed and Had Lower Health-Related Quality of Life: The Potential Benefit of Health Literacy. *J Clin Med*. 2020 Mar 31;9(4):965.
3. **Spiess B.** Faculty Opinions recommendation of Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. [Internet]. Faculty Opinions – Post-Publication Peer Review of the Biomedical Literature. H1 Connect; 2020.
4. **Nicola M, O'Neill N, Sohrabi C, Khan M, Agha M, Agha R.** Evidence based management guideline for the COVID-19 pandemic - Review article. *Int J Surg* [Internet]. 2020/04/11. 2020 May;77:206–16.
5. **Tu YF, Chien CS, Yarmishyn AA, Lin YY, Luo YH, Lin YT, et al.** A Review of SARS-CoV-2 and the Ongoing Clinical Trials. *Int J Mol Sci* [Internet]. 2020 Apr 10;21(7):2657.
6. **Harvey A.** Covid-19: medical students and FY1 doctors to be given early registration to help combat covid-19. *BMJ* [Internet]. 2020;m1268.
7. **Menon A, Klein EJ, Kollars K, Kleinhenz ALW.** Medical Students Are Not Essential Workers: Examining Institutional Responsibility During the COVID-19 Pandemic. *Acad Med* [Internet]. 2020 Aug;95(8):1149–51.
8. **Rho Y.** An Exploratory Analysis on Giving Behaviors during the COVID-19 Pandemic. *Korean Assoc NGO Stud* [Internet]. 2020;15(3):1–30.
9. **Kim SM, Park SG, Jee YK, Song IH.** Perception and attitudes of medical students on clinical clerkship in the era of the Coronavirus Disease 2019 pandemic. *Med Educ Online* [Internet]. 2020 Dec;25(1):1809929.
10. **Murie JA.** Basic and clinical biostatistics. B. Dawson-Saunders and R. G. Trapp. 260 ×

- 180 mm. Pp. 329 + ix. Illustrated. 1990. Norwalk, Connecticut: Appleton and Lange. Br J Surg [Internet]. 1992;79(7):719.
11. **Fitzgerald S.** COVID-19: Neurology Instructors Rethink Medical Clerkship Training as Clinical Rotations Are on Pause. Neurol Today [Internet]. 2020;20(8):14–5.
12. **Lai CC, Shih TP, Ko WC, Tang HJ, Hsueh PR.** Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. Int J Antimicrob Agents [Internet]. 2020/02/17. 2020 Mar;55(3):105924.
13. **Olaimat AN, Aolymat I, Elsayhori N, Shahbaz HM, Holley RA.** Attitudes, Anxiety, and Behavioral Practices Regarding COVID-19 among University Students in Jordan: A Cross-Sectional Study. Am J Trop Med Hyg [Internet]. 2020 Sep;103(3):1177–83.
14. **Nemat A, Raufi N, Sediqi MF, Rasib AR, Asady A.** Knowledge, Attitudes, and Practices of Medical Students Regarding COVID-19 in Afghanistan: A Cross-Sectional Study. Risk Manag Healthc Policy [Internet]. 2021 Apr 13;14:1491–7.
15. **Soltan EM, El-Zoghby SM, Salama HM.** Knowledge, Risk Perception, and Preventive Behaviors Related to COVID-19 Pandemic Among Undergraduate Medical Students in Egypt. SN Compr Clin Med [Internet]. 2020/11/09. 2020;2(12):2568–75.
16. **Hussein R, Manzour A, Wahdan M.** COVID-19 Knowledge, Risk Perception, and Precautionary Behavior among Medical Students in Egypt. J High Inst Public Heal [Internet]. 2021;0(0):25–32.
17. **Terzic-Supic Z, Todorovic J, Bajcetic M, Jankovic J, Santric-Milicevic M, Stamenkovic Z, et al.** Knowledge, attitudes and practices and fear of COVID-19 among medical students in Serbia. J Infect Dev Ctries [Internet]. 2021;15(06):773–9.