



Impact of COVID-19 on Education of Undergraduate Medical Students in Iraq

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Abstract

Edited by: Sasho Stoileski

Citation: Gorial FI, Medhat BM, Ali DY, Jihad HA. Impact of COVID-19 on Education of Undergraduate Medical Students in Iraq. Open Access Maced J Med Sci. 2022 Nov 28; 10(E):1807-1811.

<https://doi.org/10.3889/oamjms.2022.10877>

Keywords: Medical students; Undergraduate; COVID19;

Survey

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Received: 29-Aug-2022

Revised: 16-Nov-2022

Accepted: 18-Nov-2022

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Funding: This research did not receive any financial support

Competing Interests: The authors have declared that no competing interests exist

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BACKGROUND: Medical students around the world, especially in Iraq, have expressed their displeasure with COVID-19.

AIM: The study's goal was to assess the impact of COVID-19 on the education of Iraqi medical students at the undergraduate level.

PATIENTS AND METHODS: This cross-sectional study included undergraduate students of College of Medicine, University of Baghdad from 1st grade to 6th grade in Iraq using a validated questionnaire from the period of November 18, 2021, till December 2, 2021. Full history was taken including age, gender, and students grade, in addition to Impact of COVID-19 survey questions. The students filled the survey shared on different medical student groups on Telegram, WhatsApp, and Facebook anonymously online. All students were assured of both confidentiality and anonymity, and participation was voluntary. A convenient consecutive sampling method was used with a total sample of 406 students from different grades was collected. A descriptive statistical analysis using SPSS v28 was done.

RESULTS: Median (interquartile range) age of participants was 21 (20–23) years. Most of the participants were female 250 (61.6%). Of a total 406 participants, 362 (89.2%) reported a negative effect of COVID-19 on education of undergraduate medical students. Online medical sessions do not reflect that student knowledge was the most common cause of this negative impact (336 (82.76%), next was reduced study level 305 (75.12%), then more cheating in online sessions 299 (73.65%), less efficiency of professors 281 (69.21%), reduced future healthcare 262 (64.53%), less comfortable online sessions 226 (55.67%), less relation between participants and their colleagues 188 (46.31%), and finally less study time 156 (38.42%).

CONCLUSION: COVID-19 has a significant negative impact on education of undergraduate medical students in Iraq.

Introduction

In this century, COVID-19 pandemic has been one of the most devastating to hit mankind. A global public health emergency was declared for coronavirus disease 2019 (COVID-19) in early 2020. A lack of an effective vaccine and a rapidly rising number of positive cases underscored the need of public and frontline worker response to this pandemic in halting its spread [1], [2].

Since the developing countries have a lower socioeconomic status than the Western countries, there has been a substantially lower rate of testing and identification of cases. Millions of students worldwide have been affected by the pandemic. Lockdown measures implemented by the governments have resulted in the closure of many educational institutes worldwide. Because the disease is highly contagious, the best method to prevent it was maintaining the physical distance between individuals [3], [4].

The education of medical students at all levels was hampered by the government's "Physical distancing" tactics, which shut down educational

institutions and compelled students to stay at home. Both theoretical and practical classes are a major part of medical education. There is a possibility that students could be carriers of the disease, as the virus has been observed to spread from asymptomatic patients. As a result, educational institutions around the world were forced to close for the sake of students' and faculty members' safety [5], [6].

Most of the educational institutes shifted to online platforms for their academic activities including Iraq. However, because of limited resources and poor engagement of the students due to possibly lacking of continuous internet supply with continuous energy, lacking of electronic devices with sense of anxiety affected the students.

The medical students today are the doctors of tomorrow and should use all their senses to learn medicine [7].

The importance of this research was being the first study up to the best of our knowledge to describe effect of COVID-19 on the study duration, interest in studies, and classroom environment of medical students in Iraq as one of developing countries

indicating a significant education problem in addition to be a public health problem worldwide.

This study was designed to assess the impact of COVID-19 on the education of Iraqi medical students at the undergraduate level.

Patients and Methods

Study design

This was a cross-sectional survey study.

Setting and timing

The study was conducted at College of Medicine, University of Baghdad, Iraq, from November 18, 2021, till December 2, 2021.

Participants

Eligible participants were undergraduate medical students of all grades (1st grade to 6th grade).

Sampling methods and power analysis

A convenient sample of undergraduate medical students of all grades was collected all. Statistical power was calculated using SPSS (version 28) to find the true significant impact of COVID-19 on education of undergraduate medical students. With a sample size of 406 and α error probability of 5% with effect size of 30% and constant 50%, we got an observed statistical power of 100% and this indicates that we have 100% chance of detecting the true important effect of COVID-19 on education of medical students undergraduate.

Study variables

Explanatory variables included: Student age ranging between 19 and 24 years, with any gender, and all grades of college (1st year grade till 6th grade included in the study).

Outcome measure variable included COVID-19 survey questionnaire consisting of 10 questionnaires. These questionnaires were related to (1) impact on education of undergraduate medical students, (2) level of the study, (3) effect on future care of health, (4) professors efficiency, (5) cheating in the examination, (6) effect on student's knowledge, (7) whether online teaching being more comfortable and better than attendance sessions (8) time needed to study, (9) and finally participants' interactions with coworkers.

Data collection

Validation and reliability of the questionnaires (Google forms)

At first, questionnaires were collected from various research papers, then modified and constructed according to our outcome. The questionnaire was revised by a qualified internist and rheumatologist team for construct, and content validity of the questionnaire then approval of performing a pilot study was got. A pilot study was performed to assess face validity and carried out on 10 participants, the pre-testing of the questionnaire was useful in estimating the time taken to fill the questionnaire and exploring any ambiguity of the questions. The ten participants were excluded from the main study.

The data were collected by online surveys using Google forms. The survey included demographic features: Age, gender, and students grade. In addition to impact of COVID-19 survey questions including: (1) COVID-19 affected education of undergraduate medical students: Negative effect, positive effect, and no effect, (2) study level reduced: Yes and No (3) future healthcare will be reduced: Yes and No, (4) efficiency of professors reduced: Yes and No (5) cheating more in online session: Yes and No, (6) online session reflects students' knowledge: Yes and No, (7) online sessions less comfortable than attendance one: Yes, No (8) study time less: Yes and No and (9) relation between participants and their colleagues are reduced: Yes and No.

The students filled the survey (that was shared on different medical student groups on Telegram, WhatsApp, and Facebook) anonymously online. All students were assured of both confidentiality and anonymity, and participation was voluntary. No incentives were offered.

Ethical approval

Ethical approval was taken from College of Medicine, University of Baghdad with the No. 1262 in May 05, 2021.

Statistical analysis

Data were presented as median (interquartile range) for non-normally distributed continuous variables and number (percentages) for "categorical variables. Responses of the students were graphed. Binary logistic regression analysis was done to predict the impact of demographic characteristics on negative impact COVID-19 on medical underregulate students. $p < 0.05$ was considered statistically significant. All statistics were performed using SPSS 28 (IBM Corp, USA, 2021).

Results

A total of 406 students responded to the questionnaires, their median age 21 years with interquartile range 20–30 years. Most of the participants were females 250 (61.6%). The highest participated grade was fourth grade 78 students (19.2%), next was second grade 75 students (18.5%), and then third grade 69 (17%) followed by other grades (Table 1).

Table 1: Demographic characteristics of the participants (n = 406)

Variables	Value
Age, median (IQR), years	21 (20–23)
Gender n (%)	
Female	250 (61.6)
Male	156 (38.4)
Grade n (%)	
First grade	61 (15)
Second grade	75 (18.5)
Third grade	69 (17)
Fourth grade	78 (19.2)
Fifth grade	61 (15)
Sixth grade	62 (15.3)

IQR: Interquartile range, n: number.

Most of the students reported that COVID-19 had negative effects on medical education of undergraduate students (362 [89.2%]), while 36 (8.9%) mentioned positive effect of COVID-19, and 8 (2%) reported no effect of COVID-19 on undergraduate medical education as in Figure 1.

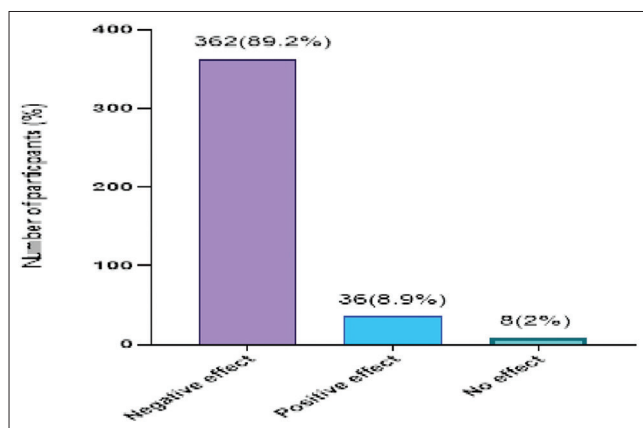


Figure 1: COVID-19 effect on education of undergraduate medical students

The opinion of participants about causes of negative effect of COVID-19 on education in undergraduate medical students was 336 (82.76%) student stated that online session did not reflect student knowledge, 305 students (75.12%) reported reduced study level, and 299 (73.65%) mentioned that more cheating in online sessions. In addition, 281 students (69.12%) demonstrated that efficiency of professors was reduced. Other opinions were 262 (64.53%) students indicated that the future healthcare would be reduced, 226 (55.6%) reported that online sessions were less comfortable, 188 (46.31%) poor relation of the students with their colleagues, and finally 156 students (38.42%) revealed that study time was less (Figure 2).

On performing binary logistic regression analysis to assess the risk of having negative effect on educations of undergraduate medical students,

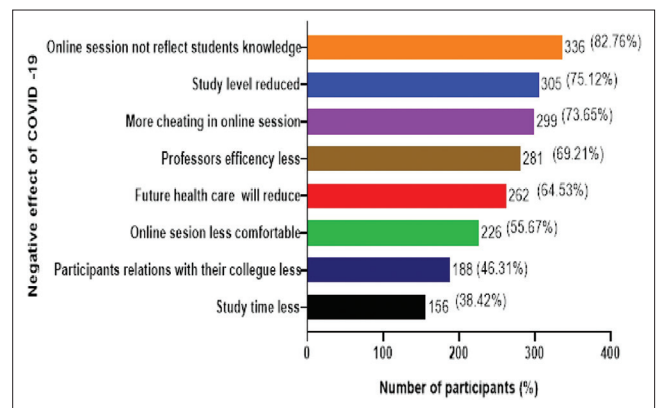


Figure 2: Participants opinion about causes of negative effect of COVID on education in undergraduate medical students

all the parameters (age, gender, and grade) were not significantly affecting the medical education of undergraduate students ($p > 0.05$) as shown in Table 2.

Table 2: Binary logistic regression analysis to predict risk of having negative impact of COVID-19 on education in undergraduate medical college students

Predictors	p	OR	95% C.I. for (OR)	
			Lower	Upper
Age	0.769	1.151	1.088	1.219
Female compared to male	0.356	0.715	0.351	1.457
First grade (reference)	Reference			
Second grade	0.123	0.406	0.129	1.275
Third grade	0.694	0.755	0.186	3.067
Fourth grade	0.188	0.422	0.117	1.526
Fifth grade	0.259	0.444	0.109	1.819
Sixth grade	0.219	0.404	0.095	1.711

Discussion

This study assessed the impact of COVID-19 on the education of Iraqi medical students at the undergraduate level by looking at their survey replies. It showed that COVID-19 had important major impact on education of undergraduate medical students.

Notably, majority of the students response (362/406, 89.2%) indicated that COVID-19 had a huge negative impact on educations of undergraduate students. This may be explained by its bad effect on academic and social level that affected the study level during the period of lockdown. Similar findings were reported by other studies. Aziz *et al.* [8] found that COVID-19 has had a significant impact on Pakistani medical students' education. It had a profound effect on their physical and mental well-being, as well as on their apprehension about the future of their education. Ossai and Ogbuoji [9] reported that COVID-19 had a negative impact on medical education in Africa.

Head *et al.* [10] reported that COVID-19 had a negative impact on undergraduate nursing education due to rapid transition from inperson to online teaching and learning proved to be difficult for students, educators, and administrators.

Dhillon *et al.* [11] showed that COVID-19 has altered the undergraduate learning experience for many students across Canada.

Moreover, different other studies were in agreement with this study. There was impaired in academic performance (57.5%) and negative influence on education (76.7%) in India, a negative impact on education in the US, and a bad attitude toward e-learning (61.6%) among Egyptian students. Student knowledge and abilities have been negatively impacted by the COVID-19 school and university closures [12], [13], [14].

According to the students opinions, the main cause of negative effect of COVID-19 on education of undergraduate medical education was poor medical knowledge of the students (82.76%), next was reduced study level (75.12%), then increased cheating in online sessions (73.65%), decreased efficiency of professors (69.21%), reduced future healthcare (64.53%), less comfortable online sessions (55.67%), less relation between participants and their colleagues 1 (46.31%), and finally less study time (38.42%). These findings suggest that unfavorable effect of COVID-19 on medical undergraduate students was related to its bad effect on students, professors, and on education methods.

In line with these findings according to another study, nearly all of the participants (90.8%) believed that COVID-19 had an impact on the length of time they spent in class. While 96% of students took COVID-19 coursework online, more than half of them (52.8%) felt that the format was ineffective. About 91% of survey participants admitted to having lost interest in their studies. Students had a hard time drawing clear lines between their academic and personal lives (84.0%). About 85% of the students were looking forward to returning to a more traditional college setting [15].

Researchers found that college students chose face-to-face instruction over online instruction, whereas only a handful favored online instruction. Research undertaken by (Beltekin and Kuyulu, 2020; Surahman and Sulthoni, 2020) found that an online course was not as beneficial as a face-to-face course in terms of student learning outcomes. In other words, they found that their respondents preferred face-to-face instruction over online instruction [16], [17].

To exclude the possible negative effect of demographic factors on education of undergraduate, logistic regression analysis showed that age, gender, and grade of the students had no significant negative effect on education in undergraduate medical college students. This suggest that the negative effect on education in undergraduate was mostly due to the effect of COVID-19.

This study has some limitations: First, the sample was convenient and from one college so the results cannot be generalized. Another limitation, the questionnaire was online and self-reported so participants might have exaggerated the responses and

limited the generalizability of the findings. Furthermore, it is not possible to generalize the findings to all universities students as the focus of this study was on undergraduate students only. An important limitation to consider is that there were no data collected pre-pandemic for comparison to look at specific changes related to the pandemic in this population; therefore, not all findings can be directly related to the pandemic. However, this study reported for the first time the negative impact of COVID-19 on education of undergraduate students in Iraq a validated self-reported Arabic version questionnaire.

Conclusion

COVID-19 had significant negative effect on undergraduate medical college students. This finding of significance was to enhance our understanding of how the COVID-19 pandemic affects. The future research is needed to investigate the long-term impacts of the pandemic on education levels and several regions in Iraq.

Acknowledgment

We thank all the participating students.

Authors Contribution

All the authors contributed in study concept, study design, data collection, data analysis, and reading and writing the drafts, and approved the final revision.

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