

## The Impact of COVID 19 pandemics and Online Learning on Medical Students' Academic Achievement

Husam Ghazi Al-Anbari <sup>1,\*</sup>, Nuha M. Salih Al-Zaubai <sup>2</sup>, Ahmed Hashim Matloob <sup>3</sup> and Ali A. Hadi AlSaady <sup>4</sup>

<sup>1</sup> Husam Ghazi Al-Anbari, Faculty of Medicine, University of Al-Ameed, Karbala, Iraq.

<sup>2</sup> Nuha M. Salih Al-Zaubai, Faculty of Medicine, University of Karbala, Karbala, Iraq.

<sup>3</sup> Ahmed Hashim Matloob, Faculty of Medicine, University of Karbala, Karbala, Iraq.

<sup>4</sup> Ali A. Hadi AlSaady, Faculty of Medicine, University of Al-Ameed, Karbala, Iraq.

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### Abstract

Provide an abstract of 150- to 250-word paragraph that provides readers with a quick overview of your work. It should *Background*: COVID-19 epidemic started in March 2021 globally as declared by WHO. In Iraq, The Ministry of Higher education ordered ceasing class attendance of all students in Universities all over the country. Online learning was the alternative solution to universities students, the medical students in Karbala university were fooling this approach.

**Objective:** This study aims to explore the impact of the COVID-19 epidemic on medical students' learning obstacles and their academic achievements.

**Material and methods:** This cross-sectional study is based on a questionnaire that was planned and provided to students in the medical college. The sample size of this study (405 participants out of 1030) was calculated using the online Raosoft® sample size calculator. The survey questionnaire consisted of 12 fixed-alternative questions including multiple choice and nominal-dichotomous.

**Results:** All responses from the medical students (405 responses) were analyzed. Female students with age 21-23 years and living in Karbala are the highest number of participants. Most students are worried about the impact of epidemics on themselves and the world. 76.63% of students agreed that their clinical skills are affected negatively and most of them are not satisfied with their academic achievement. "Feeling lazy ", "internet connectivity" and " too many distractions at home" are the top three challenges facing students during the online learning period. The majority of students (281, 70.96%) had not participated in a previous academic survey.

**Conclusion:** The pandemic period has a significant impact on students' psychological status and academic achievement. Online learning is a new experience for students who need further study. Additionally, they need to be engaged more in future university surveys to enhance their engagement with their medical college.

**Keywords:** COVID-19; Online learning; Academic achievement; Medical students

### 1. Introduction

Medical education is challenging and needs certain circumstances for students, teachers, and authorities to obtain the best results <sup>(7,11,12)</sup>. In the years 2019-2020, a worldwide outbreak of the Coronavirus has occurred, significantly affecting all aspects of life globally <sup>(1,11,12,19)</sup>. Universities are a commonplace of large-scale gatherings which alarmed

\* Corresponding author: Husam Ghazi Al-Anbari

health authorities to the prospect of the virus rapidly spreading in the community <sup>(11,12)</sup>. The Ministry of Higher Education and scientific research in Iraq ordered all universities to close as a precaution to avoid contamination and epidemic spread of the virus <sup>(19)</sup>. The staff at the Karbala University-College of Medicine followed the same instructions and halted on-campus classes while following the ministry's advice to exclusively use remote online learning for students. This experience is considered to be the first in Iraq and perhaps in many countries all over the world <sup>(11,12)</sup>.

Online learning is considered as one of the possible methods of education in medical teaching but it cannot be entirely depended on because face-to-face interaction is very essential to all medical students throughout all stages of their education<sup>(2,3,4,5,11,12,18)</sup>. However, because of the current situation, online learning was the only method of communication between students and teachers that were deemed safe and possible. Some studies advised using new technology for remote learning in medical education<sup>(3,4,11,12,19)</sup>.

Remote learning has its advantages and limitations, nevertheless, it is considered a completely new experience to Iraqi medical students and the type of learning outcome from this new method of education is still to be known<sup>(5)</sup>.

In this study, we tried to explore the effect of the pandemic and isolation of students and teachers on academic achievement as well as obtain an idea of the students' experiences and opinions on online learning.

Feedback of students is very crucial in all teaching processes <sup>(6,7,8,13,17,18)</sup>. This study is a trial for exploring feedback from medical students that we hope will add more input to the quality of education as well as give an insight to the academic staff on student experiences.

### *Objectives of the study*

To explore the impact of the Coronavirus (COVID-19) pandemic on Iraqi medical students' learning achievement and challenges they faced in 2020.

## **2. Materials and methods**

This is a cross-sectional study and based on questionnaires to medical students at The Karbala University - medical college. The college of Medicine consists of 6 stages and the total number of students is 1030. A survey of questions was prepared for medical students of all stages to answer within 7 days which was then extended to 9 days. The consent from the dean of the medical college was obtained by contacting the representatives of each stage who sent the survey to students. The survey was prepared using the monkey survey website by forming a web link and this link can be easily browsed via computer or smartphones.

The sample size of this study was calculated using the online Raosoft® sample size calculator <sup>(10)</sup> assuming a confidence interval of 99%, a margin of error of 5%, and a response rate of 50%. The calculated sample size was 404 which fitted best with our response rate (405/1030).

### **2.1. The Survey**

The survey questionnaire consisted of 12 fixed-alternative questions including multiple choice and nominal-dichotomous, see table (1).

This survey aims to cover the following aspects:

- Students' information including age, gender, and place of living whether in the same city or another place.
- Their emotional and psychological reaction during this period by exploring how worried they are about themselves, the world, and their academic achievements for this year.
- Exploring their experience with this new mode of learning, by asking them if they are happy with remote online learning, and whether online is better than class attendance. Then we explored the biggest challenges during their learning. The impact of remote learning on their clinical skills was one of the important issues to find out as well.
- Asking if this is the first academic survey, they have participated to indicate how effective communication and engagement is between teachers, students, and the University Authority.

This study lasted 9 days, starting from 11/04/2020 with the survey link sent to all medical students via their representatives and ending on 20/04/2020. 405 responses were collected and analyzed by using descriptive analysis.

**Table 1** The survey Questionnaire

1 How old are you Under 18 years 18 – 20 years 21 – 23 years > 24 years	8. Do you agree that the clinical skills started to be affected negatively because no or limited clinical work at this stage. Yes No
2. What is your gender? Male Female	9. What are the Top Three biggest challenges you faced while studying remotely online? I do not have access to the tools nor resources I need to do my study at home. Internet connectivity I am sick or helping others who are sick. Social isolation. Feeling I am lazy. General anxiety about the impact of covid 19 on academic achievement. Too many distractions at home. Communication with my colleagues/teachers is difficult. Other, please specify .....
3. Do you live in Karbala? Yes No	10. Do you think you understand the subjects from your teacher (inside the college - face to face) more than online teaching. Yes No Not sure
4. How worried are you about the impact of Covid 19 on the world? A great deal A lot A moderate amount A little None at all	11. Are you satisfied with online learning since starting of the covid epidemics? Very satisfied Satisfied Neither satisfied nor dissatisfied Dissatisfied Very dissatisfied
5. How worried are you about the impact of Covid 19 on you? A great deal A lot A moderate amount A little None at all	12. Have you participated in another academic survey at Karbala university before? Yes No
6. How worried are you about the impact of Covid 19 and isolation on your academic performance? A great deal A lot A moderate amount A little None at all	

7.Do you like distance learning (online learning) more than university classes attendance?	
Yes	
No	

### 3. Results

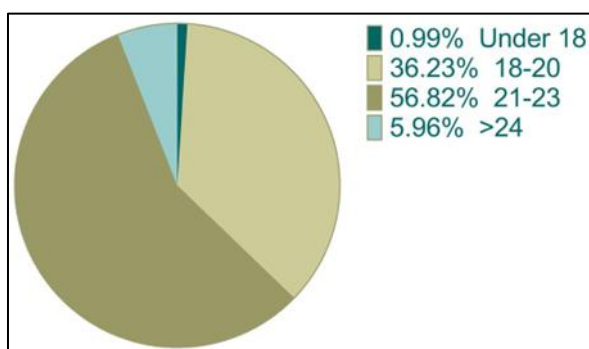
All responses from the medical students (405 responses) were analyzed.

The total number of medical students in The College of Medicine – Karbala University in the year 2020 is 1030, only 405 of them participated in this survey which is 39.32% of the total.

The average time spent by responders is 4 minutes and 6 seconds (4m.6s).

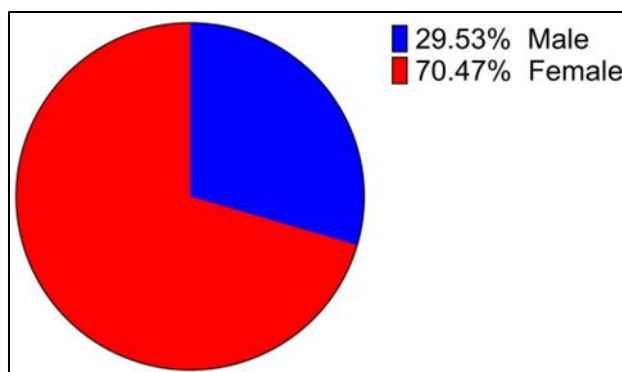
The results are distributed according to the questions:

- The Age of students (Figure 1): 2 students skipped answering this question while 403 responded to this question. Only 4 under 18 years (0.99%), 146 students aged 18-20 year (36.23%), 229 students aged 21-23 years (56.82%), and 24 students aged over 24 years (5.96%).
- Students with age 21-23 were the highest number of responders.



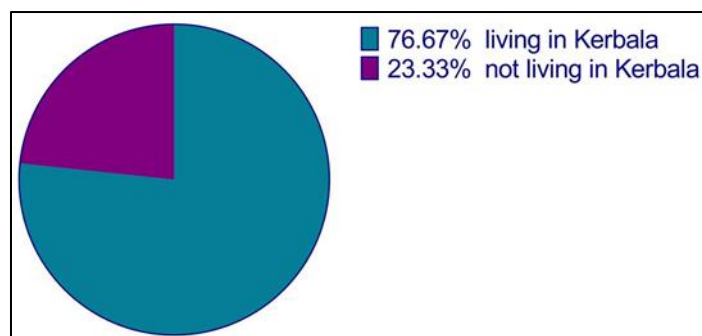
**Figure 1** Distribution of the students' age

- The Gender: Figure (2), 2 students skipped answering this question while 403 responded to this question. Females were the highest number of respondents with 284 (70.47%) while males were 119 (29.53%).



**Figure 2** Gender of students

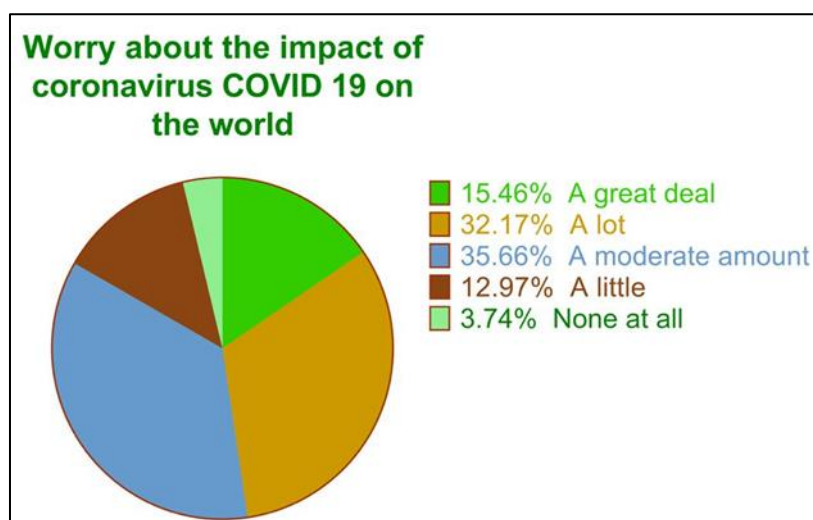
- Living place: Figure (3), 2 students skipped answering this question while 403 responded to this question. 309 students (76.67%) are living in Karbala (the same city as the college of Medicine) while 94 students (23.33%) are living outside this city.



**Figure 3** Distribution of living place

- Worry about the impact of coronavirus COVID-19 on the world: Figure (4), 4 students skipped answering this question while 401 responded to this question.

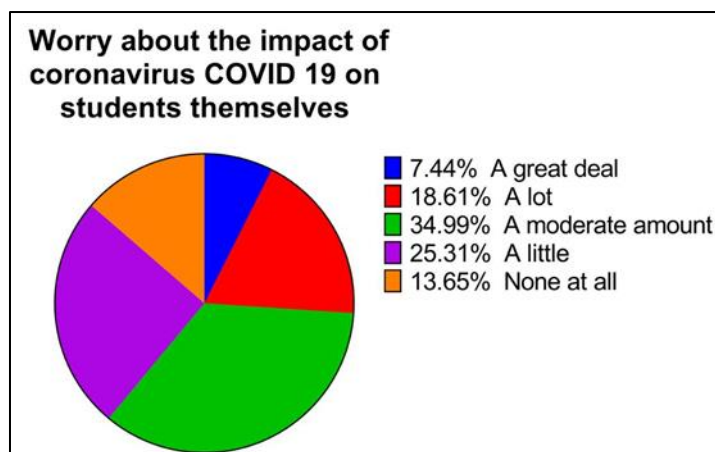
Moderate to a lot of worries were the most common responses from students with 143 (35.66%) and 129 (32.17%) respectively, indicating that in general there is a sense of worry about the impact of this pandemic on the world which exists among student.



**Figure 4** The worry of the impact of covid 19 on the world

- Worry about the impact of coronavirus COVID 19 on students themselves. Figure (5), 2 students skipped answering this question while 403 responded to this question.

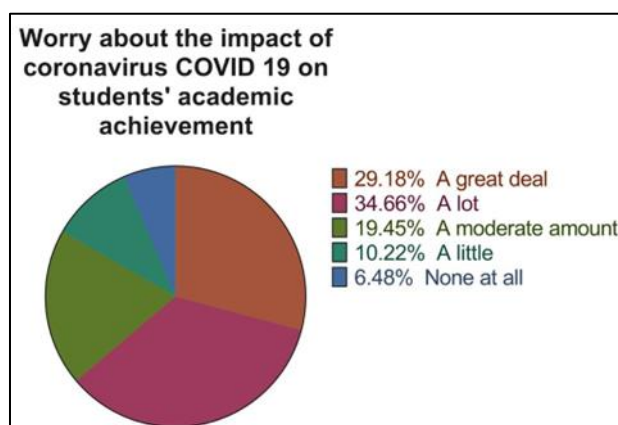
Moderate to little worry were the highest answers of students, 141 (34.99%) and 102 (25.31%).



**Figure 5** The worry of the impact of covid 19 on students

- Worry about the impact of coronavirus COVID 19 on students' academic achievement: Figure (6), 4 students skipped answering this question while 401 responded to this question.

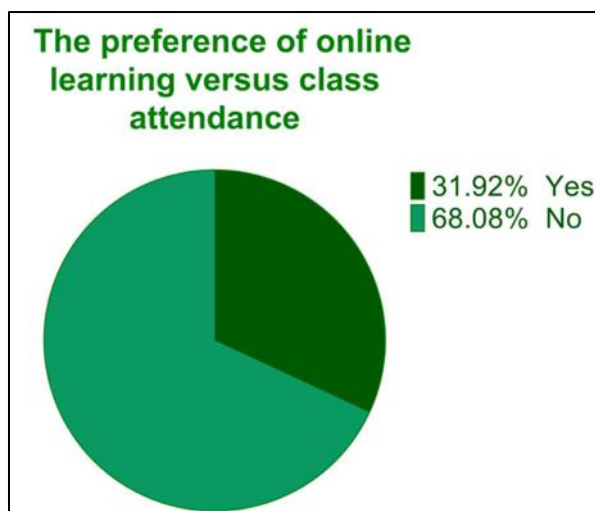
A lot and a great deal of worry were the most two common answers, 139 (34.66%) and 117 (29.18%) respectively.



**Figure 6** The worry of the impact of covid 19 on students' academic achievement.

- The preference of online learning versus class attendance: Figure (7), 4 students skipped answering this question while 401 responded to this question.

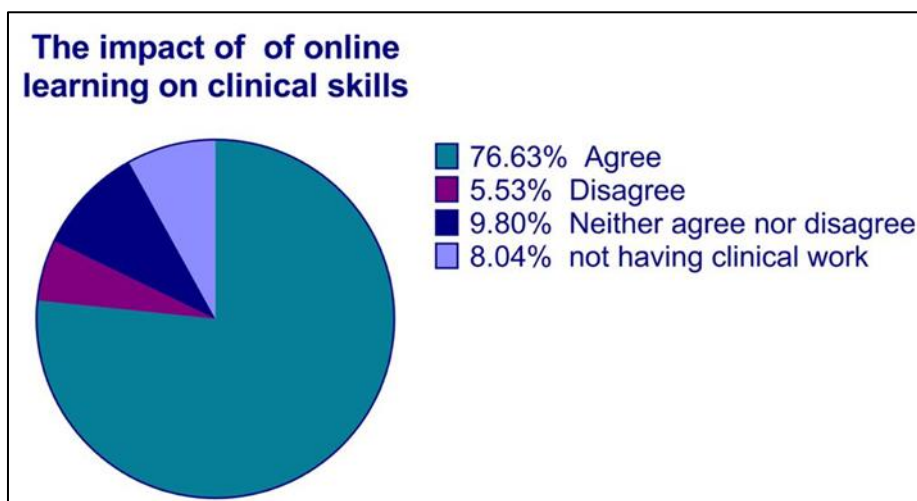
273 students (68.08%) preferred class attendance over online learning while 128 students (31.92%) preferred online education.



**Figure 7** The preference of online learning versus class attendance

- The impact of this period of online learning on clinical skills: Figure (8), 7 students skipped answering this question while 398 responded to this question.

It clarifies that the majority of students (305 students) (76.63%) agreed that their clinical skills have been negatively affected due to no physical clinical training during this period. 32 students do not attend clinical training because it is not part of their training during this year.



**Figure 8** The impact of online learning on clinical skills

- The top three biggest challenges facing students during remote online learning. Figure (9), 10 students skipped answering this question while 395 responded to this question.

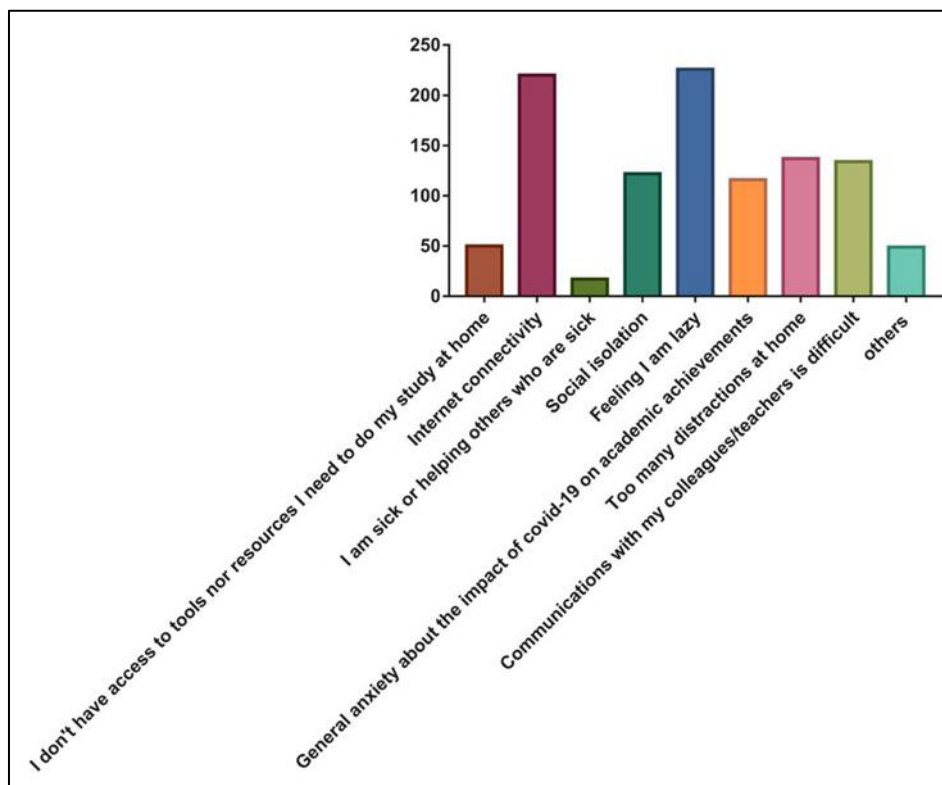
This question is important and challenging to analyze, however, the three most common challenges are:

- Feeling lazy 226 (57.22%).
- Internet connectivity problem 220 (55.7%).
- Too many distractions at home 137 (34.68%).

There are more interesting responses came under (others) such as:

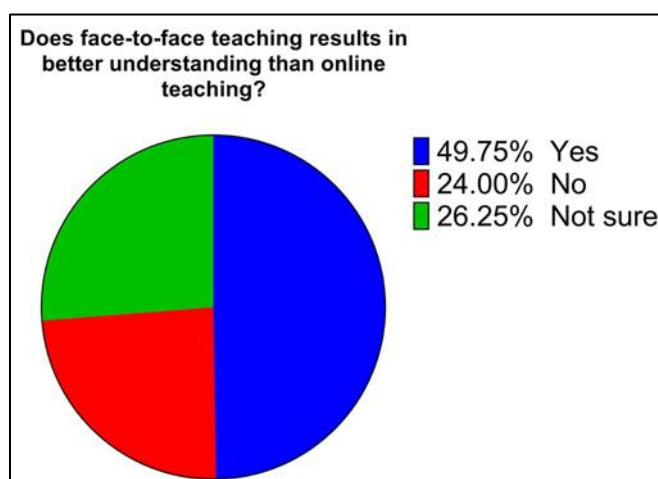
- Busy with my daughter / should look after her all the time.
- Depression.

- Teachers do not give lectures online in a similar way as in class.
- Non-engagement with online learning.
- Missing fiancé.
- Feeling the world is suffering and no hope.
- The college was slow to do this online learning.



**Figure 9** The biggest challenges facing students during remote online learning

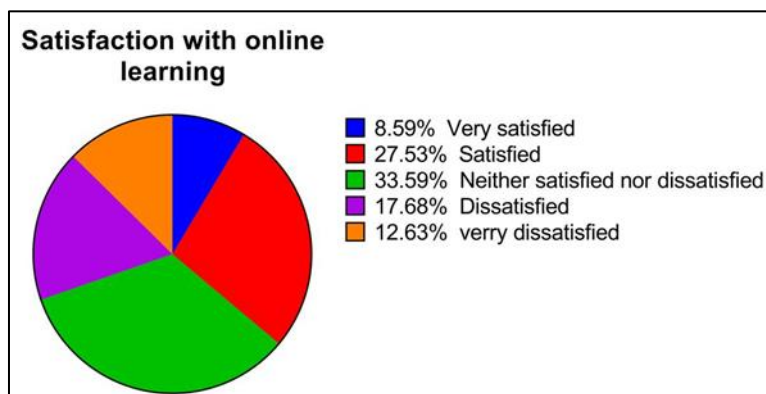
- Understanding the subjects directly from the teacher (face to face) is better than online learning: Figure (10), 5 students skipped answering this question while 400 responded to this question. 199 students (49.75%) agree that class lectures (face to face) are better than online learning. While 105 of them (26.25%) were not sure.



**Figure 10** Understanding the subjects directly from the teacher (face to face) versus online learning

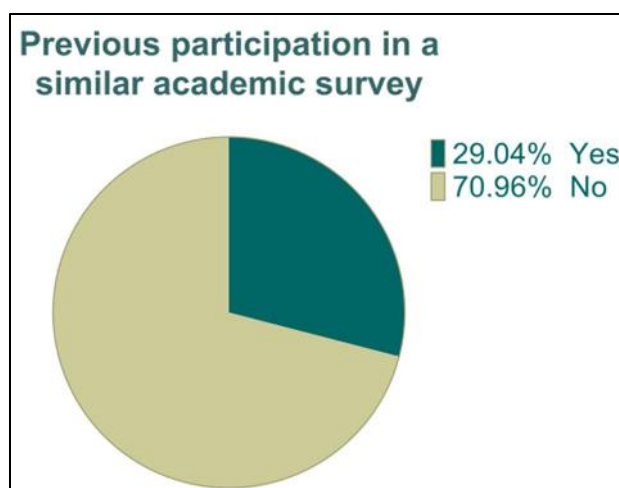


- Satisfaction with online learning: Figure (11) 9 students skipped answering this question while 396 responded to this question. There is no agreement about this issue, the highest response is neither satisfied nor dissatisfied (133, 33.59%) which gives the impression of no consensus on this issue.



**Figure 11** Satisfaction with online learning

- Previous participation in a similar academic survey: Figure (12), 9 students skipped answering this question while 396 responded to this question. The majority of students (281, 70.96%) had not participated in a previous academic survey.



**Figure 12** Previous participation in a similar academic survey

#### 4. Discussion

Feedback is one of the most important steps for a proper clinical learning-teaching environment <sup>(6,8,9)</sup>. In this study, the aim is to explore our students' experiences and opinions on the special circumstances of their first academic year with the coronavirus pandemic which has a significant impact globally <sup>(3,9,11,12,19)</sup>.

Sending the survey as a web link is an effective way to reach all students, especially given the remote circumstances of the communication, as well as having the benefit of being easy to browse.

Only 405 students participated in this survey out of 1030 which means only 39.3% of the university's cohort contributed to our study, this might be due to a feeling of non-engagement in the process of education or they felt inert to reply, or some other reasons.

Generally speaking, it is advisable to educate medical students that participation in a university's academic survey is essential to bring their views to the teaching staff and higher authority's attention to engage them in this important educational activity.

The students with ages ranging from 21-23 years, who are in years 4 and 5, contributed the most in our survey rather than years 1 and 2. This might be explained as those in middle and final years, might feel more included in the fate of the college's decisions. They are more aware of their strengths and weaknesses in their academic achievement and feel that they are closer to becoming graduated doctors <sup>(11,12,13,14,15,16)</sup>.

In this college, the number of female students is more than male students significantly, this is not commonly seen in other medical colleges but it might be explained as female students are keener to work in the medical field, or males prefer to go to other a colleges in the capital city of the country (Baghdad).

Note the male to female ratio in Iraq as per 2019 is 1.02 male to female as per Iraq demographic profile <sup>(21)</sup>.

Students are asked about how worried they are about the world, personal life, and academic achievement. The responses were almost similar for both world and personal worries which are a moderate amount of worry but for this academic year's achievement, the worry was a lot to a great deal which reflects the real impact of this isolating pandemic problem on students' future expectations of their learning <sup>(18,19,20)</sup>.

The majority of students do not like online learning in comparison to face-to-face class attendance and this can be explained by subsequent responses when they agreed that online learning alone affected their clinical skills and they did not understand the teachers well via online learning. Additionally, students expressed their major challenges while doing online learning, as 'feeling lazy' and 'internet connectivity issues as the two most common hurdles. Al-Balas et al (2020) and Baczek et al (2021) showed almost the same results <sup>(11,12)</sup>.

Regarding satisfaction with online learning at this stage, students showed variable responses however neither satisfied nor dissatisfied is the highest response, this might be due to acceptance of this online learning as the only possible method of academic communication until they might have a better chance with in-class lectures and clinical experience <sup>(11,12,13,16)</sup>.

70.96% of students had not participated in a previous academic survey before, this is an important issue to discuss. Feedback is very essential to the teaching process <sup>(6,8,9)</sup> and this should be very well appreciated by academic authorities. A strategic plan needs to be designed and applied to ensure a constant gain of students' feedback that is to be analyzed and taken into account <sup>(6)</sup>.

#### *Study limitations*

- Single institution analysis.
- Limited sample size.

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## **5. Conclusion**

The pandemic period has a significant impact on students' psychological status and academic achievement. Online learning is a new experience for students who need further study. Additionally, they need to be engaged more in future university surveys to enhance their engagement with their medical college.

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## **Compliance with ethical standards**

### *Acknowledgments*

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### *Disclosure of conflict of interest*

The authors declare no conflicts of interest.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

### Data availability

The data analyzed during this study are available from the corresponding author upon request.

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