

Perceptions of Medical Students on Distance Learning During the COVID-19 Pandemic: A Cross-Sectional Study from Bahrain

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Purpose: The COVID-19 pandemic resulted in a sudden shift from face-to-face to distance learning. We explored medical students' views of online learning during this pandemic at the Arabian Gulf University in Bahrain.

Methods: This was a cross-sectional study of students in years two, three and four (n= 559) using an electronic questionnaire. Data were collected from April 10 to May 5, 2021. The survey included three domains: behavioral, affective, and cognitive. We also analyzed the association between students' perceptions and certain demographic and institutional factors.

Results: The number of respondents was 311 (response rate: 55.6%; 27.7% males, 72.3% females). Participants were generally satisfied with distance learning (54.6%), although they had less motivation (46.3%) and required more effort (32.2%). Most students preferred distance learning for theoretical parts, and face-to-face approach for practical components (73.3%). Participants reported that distance learning, improved interaction with instructors and classmates (45.6% and 48.9%, respectively), small group learning (47.6%), independent learning (75.3%) and problem-solving skills (44.7%). The students were comfortable with online assessment (60.1%), and reported improved achievement in written (42.1%) and practical examinations (46%), but not in professional skills grades (21.6%). There was no association between students' perceptions and gender (p= 0.079), year of study (p= 0.28) or attendance of live or recorded sessions (p= 0.904), but there was a positive association with the availability of WiFi (p< 0.01) and attendance of college-organized activities (p< 0.0001).

Conclusion: Distance learning was successfully implemented during the COVID-19 pandemic. Students were generally satisfied with distance learning and online assessment, but they had concerns about the clinical skills learning. After the pandemic is over, theoretical components of the curriculum can be delivered using distance learning, whereas hands on elements should be offered face-to-face. However, those curricular reforms will likely need investing in the information technology infrastructure.

Keywords: distance learning, medical students, COVID-19, perceptions

Introduction

The spread of coronavirus disease-19 (COVID-19) has a strong impact on medical education (1–5) as well as on the psychological wellbeing of medical students.¹ On February 21, 2020, the first COVID-19 case was reported in Bahrain. Five days later, the government decided to close schools and universities across the island initially for two weeks in an attempt to stop the spread of the disease, but this closure was later extended. As a result, teaching at the College of Medicine and Medical Sciences (CMMS) at Arabian Gulf University (AGU) was suddenly shifted from face-to-face to online. That is, all educational activities, including large group resource sessions (lectures), small group tutorials, professional (clinical) skills sessions and laboratories, underwent a sudden shift to distance learning. Prior to the pandemic, we demonstrated that 93.4% of our students watched educational videos.² However, the sudden transition

to exclusive distance learning was so dramatic that it did not leave adequate time for the institution, faculty, or students to adapt.

Students enrolled at the CMMS originate from the six Gulf Cooperation Council (GCC) countries: Saudi Arabia, Bahrain, Kuwait, Oman, United Arab Emirates and Qatar.³ When the COVID-19 pandemic hit, most non-Bahraini students returned to their countries of origin and continued learning online. However, when the 2020/2021 academic year started, all students in Phase III (clerkship phase) returned for face-to-face hospital-based and simulation-based clinical teaching in small groups. However, students in Phase II (preclerkship phase) and Phase I (basic sciences phase) continued distance learning. Synchronous live online teaching was conducted on two platforms: Zoom and Big Blue Button (Moodle). The former was employed for large group resource sessions (lectures), professional skills sessions, community health activities, and laboratory sessions, including anatomy demonstrations. The latter, however, was used for small group tutorial sessions and for uploading recorded videos of educational activities, lecture notes, and formative assessment. Summative assessment was conducted by using the ExamSoft platform, while exam integrity was monitored by using exam ID and video proctoring.

Similar to other medical schools, the major challenge during the response to this pandemic was teaching practical and clinical components of the curriculum.^{4–7} Specifically, laboratory sessions, anatomy demonstrations and professional clinical skills. Indeed, some of those activities were recorded prior to the session with the help of a professional media production team and were uploaded a few days prior to a discussion forum over a live Zoom meeting. On the other hand, professional skills sessions were conducted live on Zoom, where history and examination techniques were demonstrated to the students. Regardless of the format of teaching, all educational activities were uploaded to the students after each session as a video recording on Moodle. By this, students were able to access all activities from remote locations at their convenience.

As the catastrophic spread of COVID-19 escalates, medical institutions around the globe continue to assess the impact of the pandemic on medical education.^{8–10} In general, off-campus learning was found to be feasible¹¹, and students were particularly understanding of the current situation.¹² However, the level of satisfaction differed between countries and was generally positive in theoretical learning compared to clinical skills learning. In Libya, a nationwide study reported that 54.1% of students thought that interactive learning could be achieved by distance learning. However, only 21% agreed that clinical learning could be attained successfully by using electronic approaches.¹³ In contrast, in a recent study in Pakistan, 77% of medical students had negative perceptions of distance learning under the current pandemic.¹⁰ Overall, the level of satisfaction was higher in developed countries than in developing ones.¹⁰ In Jordan, the overall satisfaction with distance learning during the COVID-19 pandemic among medical students was 26.8%. The preferred modality of teaching was synchronous live streaming, but the major challenge was internet quality.¹⁴

As the COVID-19 pandemic affects educational institutions worldwide, it is expected that distance learning will continue. Parallel to this, the power of distance learning will certainly evolve, and its opportunities will be appreciated among educators and learners. Looking at the future, many online approaches will be adopted, perhaps to change the shape of medical education for several decades to come.¹⁵ In this study, we aimed to examine medical students' views of distance learning during the COVID-19 pandemic at the AGU and factors associated with their perceptions.

Materials and Methods

Settings

The AGU is a regional institution based in Bahrain that offers medical education for citizens and residents of all GCC states, namely, Saudi Arabia, Bahrain, Kuwait, United Arab Emirates, Oman and Qatar.³ The AGU campus is located in Bahrain and. Prior to COVID, the majority of admitted students to the doctor of medicine (MD) program came from GCC countries to study in the campus. The MD program is fully integrated, problem-based, and divided into three phases: Phase I (basic sciences phase), which extends over year one of the programs in which students study basic sciences such as physics, biochemistry, and biology. During phase II of the program (preclerkship phase), which runs from the second to the fourth year of study, the students are offered a system-based, student-centered, and problem-based learning curriculum supported by short, large-group lectures called “resource sessions”. Phase II mainly focuses on basic medical sciences (anatomy, physiology, pharmacology,

microbiology, pathology, biochemistry and molecular biology), vertically integrated with a small but progressively increasing proportion of clinical sciences. Phase II is also supplemented by community medicine, professional (clinical) skills and leadership, ethics and professionalism components. After successful completion of Phase II, students move to phase III (clerkship phase), where clinical rotations are offered. Before COVID-19, all educational activities and assessment were conducted face-to-face. However, after the pandemic, distance learning was exclusively adopted by using electronic platforms (Zoom and Moodle) for both the theoretical and practical components of the curriculum. During the pandemic, all students resided in their home countries, and received their education via distance learning. As for assessment before COVID-19, Phase II students were offered two summative written exams conducted on campus: a written exam and an OSPE. Students used to answer exams questions by using papers. The written exam was comprised of a mixture of MCQs and short-answer questions, whereas the OSPE exam was composed of stations, which required short written responses. Following the pandemic, written exams were modified to include only MCQs, whereas short-answer questions were replaced by cluster MCQs. The OSPE, however, was converted to MCQ format. Both the written and OSPE were conducted by using ExamSoft platform. Students completed assessment off-campus. Exam integrity was maintained by using photo identification and real-time video monitoring.

Study Participants

Depending on their level of study, the target students who were eligible to participate in this study, were year two, three and four undergraduate medical students who were enrolled in the MD program at the CMMS of the AGU in Bahrain. Those students received their teaching exclusively online during 2020/2021 (n=559).

Study Design

This was a cross-sectional, descriptive study. Data were collected by using an electronic self-administered questionnaire that was prepared in Arabic and English and was sent via e-mail to the target students towards the end of the academic year 2020/2021 (from April 10th to May 5th, 2021). The survey was prepared initially in English and was translated to Arabic. Thereafter, it was back translated from Arabic to English to verify accuracy of translation.

The questionnaire consisted of two main sections. The first section was intended to collect demographic data, whereas the second section sought students' perception of distance learning during the COVID-19 crisis by using (21) items. Those items were categorized into three domains: behavioral (items 1–7), affective (items 8–12) and cognitive (items 13–21). For this part of the questionnaire, we used a 5-point Likert scale to record responses: strongly disagree, disagree, not sure, agree, and strongly agree. To report the results of this section, we combined “strongly agree” and “agree” responses and “strongly disagree” and “disagree” responses. The total score for this instrument ranged from 21 to 105, and the mean of the overall student perception was 69.32 ± 17.53 . Students' perceptions were classified as positive or negative. That is, perceptions were considered negative if the total score was equal to or less than the mean, whereas they were labeled positive if the score was greater than the mean.

Questionnaire Validation

The study tool was validated by conducting a pilot study on 30 students. The questionnaire items were subjected to minor modifications based on the results of the pilot study. The data of the pilot study were excluded from the actual data.

Ethical Approval

Ethical approval was granted by the Research and Ethics Committee at the AGU (approval number: E045-PI-3/21). Prior to completing the questionnaire, students who agreed to participate were provided with an information sheet and a consent form. Participants were informed that their participation was voluntary and anonymous and that they could withdraw at any time without the need to justify their decision. Collected data were kept secure by the main investigator, were only used for research purposes, and were not disclosed to any party.

Statistical Analysis

The collected data were analyzed by using the Statistical Package for Social Sciences (SPSS), version 27 (Chicago, IL, USA). Categorical variables were represented as frequencies and percentages, whereas continuous variables were

represented as the mean and standard deviation. Cronbach's alpha coefficient was used to verify the reliability of the questionnaire. To examine whether all the measured variables (domains) explicitly explained their respective latent construct, a confirmatory factor analysis (CFA) technique was applied by using structural equation modeling. For this purpose, Analysis of Moment Structures (AMOS- version 23) software was used. The chi-square test was used to measure associations between categorical variables. Statistical significance was set at $p < 0.05$.

Results

The results of Cronbach's alpha test showed that the alpha coefficient of overall student perception was 0.933 (Table 1). The alpha coefficients for the behavioral, affective, and cognitive dimensions were 0.794, 0.848 and 0.849, respectively. These data indicated acceptable internal reliability in both the instrument and subdimensions.¹⁶

The results of the confirmatory factor analysis (CFA) using the maximum likelihood method (Table 2) showed that the three-domain structure of the instrument ($n=311$) produced an acceptable fit index ($\chi^2=742.310$, $df=169$, $\chi^2/df=2.795$), which was less than 5; (IFI)=0.912; (TLI)=0.890; (CFI)=0.911; (GFI)=0.877 supported acceptable fit of the model, and RMSEA=0.074, which was less than 0.08 (values between 0.06 and 0.08 are considered an acceptable fit (Schreiber, 2006). These values were adequate, and the observed model (Figure 1) showed good fit with the theoretical model, revealing good construct validity of the instrument.

Table 3 represents the demographic data of the participants. The number of respondents reached 311 (response rate 55.6%; 27.7% males, 72.3% females). According to the year of study, the responding students were enrolled in year two (44.1%), year three (30.5%) or year four (25.4%). Based on their nationality, 98.4% of the students belonged to one of the following four countries: Kuwait (32.3%), Bahrain (30.6%), Saudi Arabia (24.2%) or Oman (11.3%).

The results of student perceptions are presented in Table 4. Regarding the behavioral domain, most respondents had used distance learning before the pandemic (83.3%). For the interaction with their instructors and classmates during online activities, most students reported that it was adequate (45.6% and 48.9%, respectively). However, some respondents believed that online learning required more time and work (32.2%). When they were asked about their views of continuing online learning after the pandemic, more than half of them preferred exclusive online learning (54.0%), while the majority stated that they would like to have a blended approach, where distance learning is adopted along with face-to-face activities for certain components of the program (73.3%).

For the affective domain, more than half of the respondents said that they were satisfied with distance learning (54.6%). Many of them added that they could cope better with difficulties using this way of learning (48.9%). The students were

Table 1 Fitness Statistics for the Factor-Analytic Models of the Instrument, College of Medicine and Medical Sciences, Arabian Gulf University, Bahrain, 2021 ($n=311$)

Model Fit Indices	χ^2	df	χ^2/df	IFI	TLI	CFI	GFI	RMSEA
Values attained	472.310	169	2.795	0.912	0.890	0.911	0.877	0.076

Abbreviations: df, degree of freedom; IFI, incremental fit index; TLI, Tucker–Lewis index; CFI, comparative fit index; GFI, goodness-of-fit index; RMSEA, root mean square error of approximation.

Table 2 Descriptive and Internal Consistency Coefficient Reliability, College of Medicine and Medical Sciences, Arabian Gulf University, Bahrain, 2021 ($n=311$)

Dimensions	No. of Items	Mean \pm SD	Cronbach Alpha
Behavioral	7	3.52 \pm 0.83	0.794
Affective	5	3.19 \pm 1.07	0.848
Cognitive	9	3.19 \pm 0.85	0.849
Overall	21	3.30 \pm 0.83	0.933

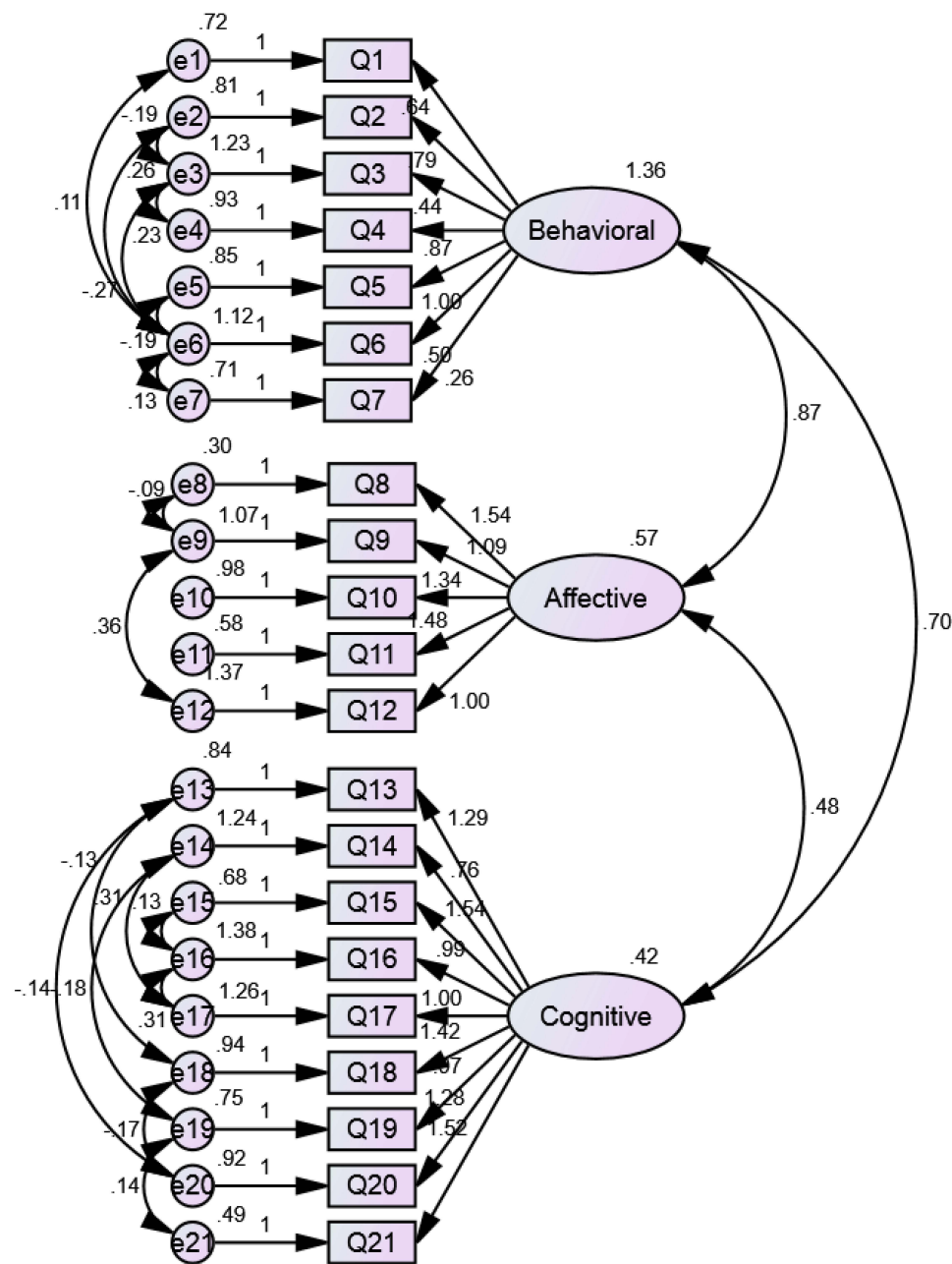


Figure 1 Confirmatory Factor Analysis (CFA) measurement model for students' perceptions of distance learning, College of Medicine and Medical Sciences, Arabian Gulf University, Bahrain, 2021 (n=311).

generally comfortable with online assessment (60.1%), albeit they were more anxious about their performance during the pandemic (40.5%). Last, respondents said that they did not have the same level of motivation to participate in online learning compared to face-to-face (46.3%).

The third domain that we explored in this study was the cognitive domain. A large proportion of respondents said that the instructors were well prepared for online teaching (45%). The majority said they preferred online learning for theoretical parts (75.6%), whereas only a small minority of them chose this approach for practical components (11.2%). The participants also said that distance learning improved their tutorial small group learning (47.6%), independent learning (75.3%) and problem-solving skills (44.7%). Regarding the impact of distance learning on their performance in different components of assessment, participants thought that this modality improved their achievement in written and

Table 3 Demographic Characteristics of Participants, College of Medicine and Medical Sciences, Arabian Gulf University, Bahrain, 2021 (n=311)

Category	Total	Percentage (%)
Gender		
Male	86	27.7
Female	225	72.3
Nationality		
Bahrain	95	30.6
Kuwait	100	32.3
Saudi	75	24.2
Oman	35	11.3
Others	5	1.6
Year of study		
Year 2	137	44.1
Year 3	95	30.5
Year 4	79	25.4

OSPE assessments (42.1% and 46%, respectively). However, a minority of participants believed that online learning improved their professional skills performance (21.6%).

The association between students' perceptions and certain demographic and institutional factors was also examined (Table 5). We reported a positive association with the availability of adequate WiFi (Chi-square= 11.922; $p < 0.01$). Similarly, a positive association was revealed with students' belief that the AGU used appropriate platforms for learning (chi-square= 16.610; $p < 0.001$). Regarding the association with AGU preparedness for distance learning, our data showed a significant result (chi-square= 14.874, $p < 0.001$). Similarly, our findings on the association with attending AGU-organized educational activities were statistically significant (chi-square= 60.440, $p < 0.0001$). In contrast, our data revealed no association with students' gender, year of study or attendance of live or recorded activities (chi-square= 3.091; $p = 0.079$, chi-square= 2.547; $p = 0.28$, and chi-square= 0.014, $p = 0.904$, respectively).

Discussion

This study was performed to examine the perceptions of medical students at the AGU of distance learning, which was implemented during the COVID-19 pandemic, and the factors associated with them. To address this goal, we conducted a cross-sectional study on preclerkship students towards the end of the academic year 2020/2021, during which exclusive online education was adopted. Participating students were generally satisfied with online learning, and assessment. Although the participants had concerns about learning clinical skills, adopting hybrid education where some of the components are taught face-to-face whereas others are offered online was generally accepted.

A great proportion of participants reported that this was not their first experience with distance learning. Indeed, in a recent study we have conducted in AGU, we revealed that more than 90% of our students watched educational videos.² One of the most important advantages of distance learning is that it allows students to learn at their convenient time and place, an advantage reported by our students. In line with this perceived benefit of distance learning, Dost et al conducted a study on 27 medical schools in the UK and reported that one of the greatest advantages of distance learning during the COVID-19 era was flexibility.⁹ Maintaining adequate interaction between instructors and learners and between students remains a challenge in online education, but this was not the case in our study. In agreement with this finding, a newly published study from Libya that involved 3348 medical students, revealed that more than half of the students reported the possibility of achieving adequate interaction in an online environment.¹³ The main problem that most medical schools faced during this pandemic was teaching practical and clinical parts of the medical curriculum by using distance learning. Although our students agreed that distance learning could be continued even after the end of the pandemic, the majority of them did not prefer online approach

Table 4 Students' Perceptions of Distance Learning, College of Medicine and Medical Sciences, Arabian Gulf University, Bahrain, 2021 (n=311)

Item	Description	Percentage of Respondents (n=311)						
		SD	DA	Total	N	A	SA	Total
Behavioral domain								
1	Distance learning provides the learner the flexibility to study at their convenient time	4.5	7.1	11.6	10.3	28.0	50.2	78.2
2	Interaction with instructors during online sessions is adequate	12.5	19.9	32.4	21.9	27.3	18.3	45.6
3	Interaction with my classmates or group members during online sessions is inadequate	20.6	28.3	48.9	22.5	21.9	6.8	28.7
4	Distance learning activities require more work and time from me compared to face-to-face activities	23.5	26.4	49.9	18.0	15.8	16.4	32.2
5	After COVID-19 is finished, I prefer to continue exclusive distance learning	36.0	18.0	54.0	17.4	11.9	16.7	28.6
6	After COVID-19 is finished, I prefer to continue partial distance learning along with resuming some face-to-face activities	7.4	4.8	12.2	14.5	25.4	47.9	73.3
7	Before COVID-19 crisis, I used distance learning resources such as online educational videos	1.6	4.5	6.1	10.6	44.1	39.2	83.3
Affective domain								
8	I am satisfied with distance learning.	12.2	12.2	24.4	20.9	33.4	21.2	54.6
9	I am comfortable to do exams online	11.6	9.6	21.2	18.6	28.9	31.2	60.1
10	I have the same level of motivation to participate in distance learning compared to traditional face-to-face learning	22.5	23.8	46.3	17.0	19.3	17.4	36.7
11	I cope better with difficulties in distance learning compared to traditional face-to-face learning	14.1	16.4	30.5	20.6	26.7	22.2	48.9
12	I am more anxious about my exam performance during COVID-19 than before this pandemic	15.4	20.6	36.0	23.5	16.4	24.1	40.5
Cognitive domain								
13	I prefer distance learning for theoretical parts, eg, resource sessions	6.8	7.4	14.2	10.3	20.6	55.0	75.6
14	I prefer distance learning for practical parts, eg, labs, professional skills	61.7	19.9	81.6	7.1	3.2	8.0	11.2
15	Distance learning improved my performance in written exams	15.1	11.3	26.4	31.5	22.8	19.3	42.1
16	Distance learning negatively affected my performance in OSPE exams	19.0	27.0	46.0	26.0	10.6	17.4	28
17	Distance learning improved my performance in professional skills exams	29.6	13.2	42.8	35.7	11.3	10.3	21.6
18	Distance learning improved my small group learning in tutorial	14.5	11.6	26.1	26.4	23.5	24.1	47.6
19	Distance learning improved my ability to learn on my own	4.8	3.5	8.3	16.4	33.8	41.5	75.3
20	Instructors are well prepared for online teaching	14.1	13.2	27.3	27.7	28.0	17.0	45.0
21	Distance learning improved my problem-solving skills	9.0	13.8	22.8	32.5	23.2	21.5	44.7

Abbreviations: SD, strongly disagree; DA, disagree; N, neutral; A, agree; SA, strongly agree.

for practical parts of the program. Similar to those findings, a recent study conducted in one of the medical colleges in Saudi Arabia recommended blended learning in the future, in which practical components are taught face-to-face.¹⁷

Assessment-related anxiety among learners, who receive instructions online during COVID-19, was another important dimension investigated in this study. In general, students were happy about the process of online assessment, but many of them expressed anxiety about their performance in examinations. These findings were in line with the data reported in a study from Germany which revealed that students experienced a great level of distress related to their examinations and that they requested more clarity from their institutions regarding their examinations.⁵ Another study from Japan examined the psychological wellbeing of medical students due to the pandemic. The authors revealed that 28.5% of students suffered from significant psychological distress.¹⁸ Interestingly, our students reported that distance learning improved their performance in written and OSPE examinations. However, their main concern was their performance in the clinical skills assessment.

Table 5 Association Between Perceptions of Online Learning and Different Factors, College of Medicine and Medical Sciences, Arabian Gulf University, Bahrain, 2021 (n=311)

Variables	Overall		P. value
	Negative n (%)	Positive n (%)	
Gender			
Male	34 (39.5)	52 (60.5)	0.079
Female	114 (50.7)	111 (49.3)	
Total	148 (47.6)	163 (52.4)	
Year of study			
Year 2	59 (43.1)	78 (56.9)	0.280
Year 3	51 (53.7)	44 (46.3)	
Year 4	38 (48.1)	41 (51.9)	
Total	148 (47.6)	163 (52.4)	
Adequate Wi-Fi.			
Yes	108 (42.9)	144 (57.1)	P < 0.01
No	40 (67.8)	19 (32.2)	
Total	148 (47.6)	163 (52.4)	
Platforms for learning			
Yes	127 (44.3)	160 (55.7)	P < 0.001
No	21 (87.5)	3 (12.5)	
Total	148 (47.6)	163 (52.4)	
Activities attendance			
Live	68 (47.2)	76 (52.8)	0.904
Recorded	80 (47.9)	87 (52.1)	
Total	148 (47.6)	163 (52.4)	
Prepared distance learning			
Yes	80 (34.6)	151 (65.4)	P < 0.001
No	68 (85.0)	12 (15.0)	
Total	148 (47.6)	163 (52.4)	
Source for learning			
College organized	37 (33.0)	75 (67.0)	P < 0.0001
Other	111 (55.8)	88 (44.2)	
Total	148 (47.6)	163 (52.4)	

Many learning skills were reported to have improved by the students during the pandemic. Those learning competencies are anticipated to develop because of online learning, which requires more self-dependency. Durfee et al undertook a study in which medical students were enrolled in large group didactic lectures, flipped classrooms and virtual small group radiology sessions to compensate for their incomplete radiology rotation because of the COVID-19 pandemic. The authors reported that the latter received the highest satisfaction among the learners.¹⁹

The availability of adequate internet was strongly associated with positive perceptions among the students. Efficient online learning relies on the use of applications that require strong internet connections. In Brazil, universities offered students who did not have adequate access to WiFi in their home SIM cards with preloaded internet packages.⁷ Lack of adequate WiFi was the main problem faced by 69.1% of Jordanian medical students while trying to participate in distance learning,¹⁴ a problem that is not limited to developing countries. In the UK, 21.53% of medical students reported that problems in internet connectivity were a major obstacle.⁹ Our data also showed a strong association between students' belief that the AGU used

appropriate platforms and positive perceptions. Our institution employed two main platforms for distance learning during the pandemic: Zoom and Moodle. The former was mainly used for large group lectures, anatomy demonstrations and professional skills live streaming. This platform was preferred for learning by medical students in other regional medical schools too.^{8,20} There was a clear association between attending activities organized by the AGU and students' positive attitudes, regardless of their year of study or whether those activities were attended live or recorded. This clearly indicated that the students were satisfied with the distance learning activities offered by the college whether they attended them live or watched their recorded videos later. The major limitation of this study was the suboptimal response rate. The explanation for student's reluctance to participate in this investigation was that our students had been requested to respond to several surveys over the first year of the emergence of COVID-19. Those surveys focused on their perceptions of the various aspects of the curriculum implementation, as part of our response to the pandemic. In addition, students had to evaluate units as part of the quality assurance process in the college.

Conclusion

Although the shift from face-to-face to online education and assessment during COVID-19 was sudden, medical students were generally satisfied with the institution's response to the pandemic. The huge reform imposed by the pandemic is likely to continue, albeit partially. That is online instructions are going to be acceptable for theoretical parts of medical curricula, even after the pandemic is finished. However, practical and clinical components must be conducted face-to-face to allow the development of psychomotor skills. Future choices of medical institutions will depend on the availability of proper information technology infrastructure and faculty staff training. Medical education post COVID-19 will be different compared to that before the pandemic. Therefore, medical schools should be prepared for those emerging changes, which are likely to shape medical education for years to come.

Abbreviations

GCC, Gulf Cooperation Council; MD, Doctor of Medicine; AGU, Arabian Gulf University; CMMS, College of Medicine and Medical Sciences; CFA, Confirmatory Factor Analysis; OSPE, Objective Structured Practical Examination; MCQs, Multiple Choice Questions; COVID-19, Coronal Virus Disease of 2019; RMSEA, Root Mean Square Error of Approximation; CFI, Comparative Fit Index; TLI, Tucker Lewis Index; IFI, Incremental Fit Index; GFI, Goodness of Fit Index.

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