https://journal.utripoli.edu.ly/index.php/Alqalam/index eISSN 2707-7179

8th Libyan International Conference on Medical, Applied, and Social Sciences

المؤتمر الدولي الليبي الثامن للعلوم الطبية والتطبيقية والانسانية

تحت شعار: التطورات التكنولوجية والاتجاهات الحديثة في التعليم

Original article

Reliability of Electronic *versus* Attendance Examination among Undergraduate Medical Students In Covid-19 Era

Amenah Fadhil Ridha*, Zainab Abdul Ameer Jaafar, Wassan Nori, Ban H. Hameed

Department of Obstetrics and Gynecology, College of Medicine, Mustansiriyha University, Baghdad, Iraq

ARTICLE INFO

Corresponding Email. *amenah.fadhil@uomustansiriyah.edu.iq*

Received: *02-03-2024*
Accepted: *06-04-2024*
Published: *26-06-2024*

Keywords. COVID-19, Electronic exam, Attendance exam.

ABSTRACT

COVID-19 raised a rapid progressing health problem. Iraq has taken drastic steps to combat the pandemic, including suspending all in-person educational activities. The consequent integration of e-learning into universities has issued student evaluation challenges. Electronic exams were implemented to evaluate medical college students.: A cross sectional study reviewed recorded marks of 275 fourth grade medical students in the Department of Obstetrics and Gynecology/ Mustansiriyha University in the form of a single best answer. In addition, their means were compared with the standards of the same students in three electronic exams that were performed at the time of the health ban.Analysis showed a mean mark for the attendance exam was 70.54±24.8 versus 91.51±17.35out of 100 marks for the electronic exam. The rate of achieving high grades in E exams was 79.3% versus 20.4% of students in electronic exams. The success rate in the electronic exam was 95.6%, whereas in the attendance exam, 82.9%.In view of the present health crisis, including integral E-learning and implementing attendance examinations may be the best possible choice. Still, the unacceptably high success rates with high-grade scales in electronic exams necessitate accurate assessment models to avoid this negative consequence.

Cite this article. *Ridha A, Jaafar Z, Nori W, Hameed B. Reliability of Electronic versus Attendance Examination among Undergraduate Medical Students In Covid-19 Era. Alq J Med App Sci. 2024;7(Supp2):01-05.*
https://doi.org/10.54361/ajmas.2472201

INTRODUCTION

COVID-19 has caused a global public health crisis that affects China and the entire world. It was designated a worldwide emergency that has reached the pandemic level and posed many economic, educational and health concerns [1, 2]. Most governments, including Iraq, have taken stringent measures to limit the epidemic, one of which is the suspension of all educational activity in almost all of the country's universities [3,4] and widespread cancellation of in-person medical classes, being mostly substituted pre-recorded videos or live-streams lectures. These were emergency steps to limit the spread of the epidemic [5,6]. Consequently, the Iraqi higher education government ordered that electronic learning be continued, and by the end of the year, student evaluation was done by electronic exam. The move from pen and paper tests (attendance exams) to electronic examinations (E-exams) has sparked widespread concern over whether this would make cheating simpler [7]. Assessment is necessary for the educational system to collect information on the amount to which a learning result has been achieved [8]. Valid and trustworthy assessment increases the quality of the learning program. Because of a health issue, switching to online education necessitates scheduling E-examinations through which academic staff members can offer timely test feedback, especially if the number of students grows [4]. The need to investigate the invading virus pathophysiology is obvious to everybody in the event of a pandemic. However, the influence of COVID-19 on medical education, on the other hand, is far less evident. This study aimed to navigate the

challenges and reliability issues of electronic tests in assessing medical college students compared to attendance examinations.

METHODS

A cross sectional study was done through a review of recorded marks of fourth-grade medical students in the Department of Obstetrics and Gynecology (OBG) / College of Medicine; Mustansiriyha University, in Baghdad / Iraq, for one year from September 2019 till August 2020.The performance of a total of 275 fourth grade students in three attendance exams in Obstetrics (out of 100 as a total mark) in the form of the single best answer had been reviewed, and the data were recorded, and their means were compared with the means of the same students in three electronic exams that were performed at the time of health ban. The ethical committee approved this study in the Department of OBG ; College of Medicine Mustansiriyha University. Statistical Analysis: Statistical packages of social science SPSS. Version 24.0 was used to analyze the data. Descriptive statistics were used to report students' evaluation marks as mean, standard deviation, median, mode, standard error, variance and range. Categorical groups were described as frequencies and percentages. Student t-test determined the difference between the two exams. Significance were set with a P-value < 0.05 for all .

RESULTS

The descriptive statistics of the studied groups are clarified in Table 1, with a mean mark for attendance exam was 70.54±24.8 versus 91.51±17.35 for the electronic exam (out of a total of 100 for each exam) .The frequencies and percentages of students' marks showed that achieving high marks more than 90 was seen in 79.3% of students in electronic exams while in attendance exam seen in 20.4% of students only. Thus, the success rate in the electronic exam was 95.6%, whereas in the attendance exam, 82.9% highlighted in Table 2. t-test compared the means of both study groups showing a significant difference between the two as P-value was < 0.05.

Table 1. Descriptive statistics of attendance exam versus electronic exam

Variables		Attendance exam	Electronic exam
N	Valid	275	275
	Missing	0	0
Mean		70.55	91.51
Std. Error of Mean		1.49	1.047
Median		76.0	96.67
Mode		100.00	100.00
Std. Deviation		24.81	17.36
Variance		615.51	301.22
Range		100	100
Minimum		0.0	0.0
Maximum		100	100
Sum		19400.80	25166.00

The frequencies and percentages of students' marks showed that achieving high marks more than 90 was seen in 79.3% of students in electronic exams while in attendance exam seen in 20.4% of students only. Thus, the success rate in the electronic exam was 95.6%, whereas in the attendance exam, 82.9% highlighted in table 2.

Table 2. Frequencies and percentages distribution of the studied groups

Scale	Attendance exam N=275		Electronic exam N=275	
	Frequency	Percentage	Frequency	**Percentage**
0 – 10	7	2.5%	4	**1.5%**
11 – 20	7	2.5%	1	**0.4%**
21 – 30	13	4.7%	2	**0.7%**
31 – 40	10	3.6%	2	**0.7%**
41 – 50	23	8.3%	4	**1.5%**
51 – 60	36	13.1%	5	**1.8%**

61 – 70	31	11.3%	8	**2.9%**
71 – 80	31	11.3%	5	**1.8%**
81 – 90	61	22.2%	26	**9.5%**
90 – 100	56	20.4	218	**79.3**
Total	275	100%	275	**100%**
Success rate (≥50%)	228	82.9%	263	**95.6%**

In tables 3, t-test compared the means of both study groups showing a significant difference between the two as P-value was < 0.05.

Table 3. Comparison between the studied groups

Variables	**Test value equals to zero**					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence interval of the difference	
					Lower	Upper
Attendance exam	47.16	275	.000	70.59	67.60	73.49
Electronic exam	87.44	275	.000	91.51273	89.45	93.57

DISCUSSION

The traditional well-established attendance education had been disrupted since the declaration of COVID-19 as a global crisis , with the resultant forced rapid transition to electronic learning and education over the world. As part of higher education learning, medical students faced challenges with regard to electronic learning, especially the absence of physical attendance and hands-on clinical training. Our college tried to pass this limitation by many evolving adaptations concerning learning and examination. The current study revealed a significantly higher success rate and high-grade results in the electronic exam than the attendance exam regarding the single best answer form of evaluation and agreed with the number of studies . [9,10] These results alert us to the mandatory application of a reliable assessment method, especially in specialties where the graduates involved primarily with population health and wellbeing.

In accordance with our study, Bustani et al. [11] conducted a study on COVID-19 pandemic impact on the faculty staff academic performance and medical college students' performance of the in 27 universities in Iraq. By the questioner form. His results highlighted that turning off the practical sessions decreased students' level during the pandemic by 42.6%. The student acquires confidence and skill through the practical sessions, a fundamental prerequisite for medical students as doctors in surgery [12]. Among the evaluations assessed by their questionnaire, the was a significant tendency opinion of the academic universities and teachers agree that 79.1 % of legitimacy and quality of the first top three students during the pandemic and e-learning is lower than the quality and legitimacy of the past studies during the attendance exams of past years[8]. Furthermore, their study spotted a difference between students' interaction within the traditional attendance of lectures versus online virtual lecture attendance by 70% difference on statistical analysis.

Our analysis confirmed a 95.6% success rate for online exams versus 82.9% for the attendance exams. In line with our results, Bustani et al. postulated that top-three students were unreal in the tested sample. Actually, 76 % of teachers declared that the student's sequence was unrealistic at 100%. However, the students' ability to score grade was acceptable and with teachers expectation at 57.4 % [11].Higher education institutions face many challenges by successive scientific and technological developments which are unfortunately absent in the Iraqi educational institutions [13,14].

COVID-19 era impacted the medical students, yet online teaching platform were of value owing to their worldwide accessibility, which ensure that all medical students, regardless of their locality, can access webinars at the time they are conducted or can be recorded to be used later [15-18]. Nevertheless, class attendance has an important advantage over e- learning. Credé et al. conducted a meta-analysis study, examining the correlation of in-person attendance with students' grades; he recommended attendance as a valuable predictor that outstands other academic performance predictors. It goes without saying that attending classes delivers unique motivation to students that positively relate to their grades [19].

Many faculty members and medical students were questioning how to proceed after COVID-19 pandemic . We wanted to shed light on the role of educational officials' decisions in influencing the level and quality of medical students. Incorporating integral E-learning and using attendance exams may be the best available option in light of the current health crisis, which has no sign of resolution in the near future.

Acknowledgments

To our beloved university Mustansiriyha for continues support.

Conflicts of Interest

None

REFERENCES

1. Nori W, H. Hameed B, Thamir A, Fadhil A. COVID-19 in Pregnancy: Implication on Platelets and Blood Indices. Rev Bras Ginecol Obstet 2021;43(8):595–599.
2. H. Hameed B, Thamir A, Hadeel Jassim, Miami Abdul Hassan Ali. Maternal and perinatal outcome of pregnant women with COVID 19, a tertiary centre experience in Iraq — A Case Series. J Pak Med Assoc. Vol. 71, No. 12 (Suppl. 8), December 2021
3. Shahzad A, Hassan R, Aremu AY, Hussain A, Lodhi RN. Effects of COVID-19 in E-learning on higher education institution students: the group comparison between male and female. Quality & quantity. 2021 Jun;55(3):805-26.
4. Elsalem L, Al-Azzam N, Jum'ah A, et al. Remote E-exams during Covid-19 pandemic: A cross-sectional study of students' preferences and academic dishonesty in faculties of medical sciences.Annals of Medicine and Surgery. 2021; 62 : 326–333 , doi: 10.1016/j.amsu.2021.01.054.
5. Hilburg R, Patel N, Ambruso S, Biewald MA, Farouk SS. Medical education during the coronavirus disease-2019 pandemic: learning from a distance. Advances in Chronic Kidney Disease. 2020 Sep 1;27(5):412-7.
6. Chirumamilla A, Sindre G, Nguyen-Duc A. Cheating in e-exams and paper exams: the perceptions of engineering students and teachers in Norway. Assessment & Evaluation in Higher Education. 2020 Oct 2;45(7):940-57.
7. Baticulon, R.E., Sy, J.J., Alberto, N.R.I. et al. Barriers to Online Learning in the Time of COVID-19: A National Survey of Medical Students in the Philippines. Med.Sci.Educ. 31, 615–626 (2021). https://doi.org/10.1007/s40670-021-01231-z
8. Ferrel MN, Ryan JJ. The Impact of COVID-19 on Medical Education. Cureus. 2020;12(3):e7492. Published 2020 Mar 31. doi:10.7759/cureus.7492
9. Eurboonyanun C, Wittayapairoch J, Aphinives P, Petrusa E, Gee DW, Phitayakorn R. Adaptation to Open-Book Online Examination During the COVID-19 Pandemic. J Surg Educ. 2021;78(3):737-739.
10. Papapanou M, Routsi E, Tsamakis K, Fotis L, Marinos G, Lidoriki I, Karamanou M, Papaioannou TG, Tsiptsios D, Smyrnis N, Rizos E. Medical education challenges and innovations during COVID-19 pandemic. Postgraduate Medical Journal. 2021 Mar 28.
11. Ghadeer Sabah Bustani, Abdullah Shakir, Yesar Mh. AL-Shamma, Abbas Taher, Hussein Najm Abed.,Fadhil Sead1, Yassir Hammed Zyara, Aiman Mohammed Baqir Al-Dhalimythe impact of Covid-19 pandemic on the academic performance of the medical science teaching staffs and quality of students in Iraq. Turk J Field Crops 2021, 26(2), 252-258 DOI: 10.17557/tjfc.834566
12. Mogali, S. R., Yeong, W. Y., Tan, H. K. J., Tan, G. J. S., Abrahams, P. H., Zary, N., ... & Ferenczi, M. A. Evaluation by medical students of the educational value of multi-material and multi-colored three-dimensional printed models of the upper limb for anatomical education. Anatomical sciences education.2018; 11(1), 54-64.
13. Mousa AH, Mousa SH, Mousa SH, Obaid HA. Advance acceptance status model for E-learning based on university academics and students. InIOP Conference Series: Materials Science and Engineering 2020 (Vol. 671, No. 1, p. 012031). IOP Publishing.
14. Nori W, Akram W, Rasheed SM, Akram NN, Taher TM, Kassim MA, Pantazi AC. Evaluating the Academic Performance of Mustansiriyah Medical College Teaching Staff vs. Final-Year Students Failure Rates. Al-Rafidain Journal of Medical Sciences (ISSN 2789-3219). 2023 Nov 20;5(1S):S151-156.
15. Sandhu, P., & de Wolf, M. The impact of COVID-19 on the undergraduate medical curriculum. Medical Education Online. 2020:25(1),1764740.
16. Srivastava, P.Advantages & disadvantages of e-education & e-learning. Journal of Retail Marketing & Distribution Management.2019; 2(3), 22-27.
17. Ahmady S, Kallestrup P, Sadoughi MM, Katibeh M, Kalantarion M, Amini M, Khajeali N. Distance learning strategies in medical education during COVID-19: A systematic review. J Educ Health Promot. 2021 Nov 30;10:421.
18. Atia A, Elfard S. Libyan medical education program and WFME accreditation process: a brief report. Libyan Medical Journal. 2022 Jun 1:34-7.
19. Credé M, Roch SG, Kieszczynka UM. Class attendance in college: A meta-analytic review of the relationship of class attendance with grades and student characteristics. Review of Educational Research. 2010 Jun;80(2):272-95.

موثوقية اختبار الحضـــور الإلكتروني مقابل اختبار الحضـــور بين طلاب الطب الجامعيين في عصر كوفيد - 19

امنه فاضل رضا، زينب عبد الامير جعفر، وسن نوري، بان هادي حميد

قسم أمراض النساء والتوليد كلية الطب الجامعة المستنصرية، بغداد، العراق

المستخلص

أثار كوفيد - 19 مشكلة صحية سريعة التطور. اتخذ العراق خطوات جذرية لمكافحة الوباء، بما في ذلك تعليق جميع الأنشطة التعليمية الشخصية. وقد أدى التكامل الناتج عن التعلم الإلكتروني في الجامعات إلى ظهور تحديات في تقييم الطلاب. تم تنفيذ الاختبارات الإلكترونية لتقييم طلاب كلية الطب. قامت دراسة مقطعية بمراجعة الدرجات المسجلة لـ 275 طالب طب في الصف الرابع في قسم أمراض النساء والتوليد الجامعة المستنصرية في شكل أفضل إجابة واحدة. بالإضافة إلى ذلك، تمت مقارنة متوسطاتهم مع معايير نفس الطلاب في ثلاثة اختبارات إلكترونية تم إجراؤها وقت الحظر الصحي. وأظهر التحليل أن متوســـط علامة الامتحان الحضـــوري كان 24.870.54 مقابل 17.3591.51 من أصـــل 100 درجة للامتحـان الإلكتروني. وبلغـت نســـبـة تحقيق درجـات عـاليـة في الامتحـانـات الإلكترونيـة 79.3% مقـابـل 20.4% للطلبـة في الامتحـانـات الإلكترونيـة. وبلغـت نســـبـة النجـاح في الامتحـان الإلكتروني 95.6%، بينما في الامتحان الحضـوري 82.9% في ضـوء الأزمة الصـحية الحالية، قد يكون تضـــمين التعلم الإلكتروني المتكامل وتنفيذ اختبارات الحضـــور هو أفضـــل خيار ممكن. ومع ذلك، فإن معدلات النجاح المرتفعة بشـــكل غير مقبول مع المقاييس العالية في الامتحانات الإلكترونية تتطلب نماذج تقييم دقيقة لتجنب هذه النتيجة السلبية.

الكلمات الدالة. كوفيد - 19 ، الامتحان الإلكتروني، امتحان الحضور.