Assessing Faculty Preference Regarding Online Tools for Assessment in Medical Education: A Cross-Sectional Multi-Center Study

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Abstract

Purpose: E-assessment is a novel practice in developing countries; hence it is essential to determine the online platforms and tools preferred by health sciences education faculty for online assessment. The purpose of this study was to assess the preference of faculty in medical and dental education regarding the online tools for e-assessment of undergraduate students. Methods: This cross-sectional, descriptive study was conducted from June until August 2020 on the faculty of medical and dental undergraduate programs of private and public sector institutes across Karachi, with a sample size of 152. Data was collected through convenience sampling using a validated questionnaire and was analyzed using SPSS version 23. Mean and standard deviation was calculated for numerical data while frequencies and percentages analyzed for categorical data. Results: A total of 125 faculty members participated in the study, having mean age of 37.8±9.99 years, with the majority affiliated with medical program (78%), working in private institutes (58.4%), and teaching basic sciences (64%). Faculty of both basic and clinical sciences preferred Question and Answer (Zoom) for formative assessment (37.6% and 20.8% respectively). Although most faculty were found to not use any online tool for summative assessment, nonetheless, Socrative was preferred for this purpose (23.2% basic sciences, 12.8% clinical sciences). Almost 68% of the faculty faced difficulties in conducting e-assessments and reported that their issues were not resolved effectively (48.2%). Conclusion: Formative assessment was found to be preferably conducted by the Question-and-Answer feature of Zoom. Even though most of the faculty reported not utilizing any online tool for conducting summative assessment, it was found that quiz-based platforms were preferred.

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ABSTRACT

Purpose: E-assessment is a novel practice in developing countries; hence it is essential to determine the online platforms and tools preferred by health sciences education faculty for online assessment. The purpose of this study was to assess the preference of faculty in medical and dental education regarding the online tools for e-assessment of undergraduate students. **Methods**: This cross-sectional, descriptive study was conducted from June until August 2020 on the faculty of medical and dental undergraduate programs of private and public sector institutes across Karachi, with a sample size of 152. Data was collected through convenience sampling using a validated questionnaire and was analyzed using SPSS version 23. Mean and standard deviation was calculated for numerical data while frequencies and percentages analyzed for categorical data. **Results:** A total of 125 faculty members participated in the study, having mean age of 37.8 ± 9.99 years, with the majority affiliated with medical program (78%), working in private institutes (58.4%), and teaching basic sciences (64%). Faculty of both basic and clinical sciences preferred Question and Answer (Zoom) for formative assessment (37.6% and 20.8% respectively). Although most faculty were found to not use any online tool for summative assessment, nonetheless, Socrative was preferred for this purpose (23.2% basic sciences, 12.8% clinical sciences). Almost 68% of the faculty faced difficulties in conducting e-assessments and reported that their issues were not resolved effectively (48.2%). **Conclusion:** Formative assessment was found to be preferably conducted by the Question-and-Answer feature of Zoom. Even though most of the faculty reported not utilizing any online tool for conducting summative assessment, it was found that quiz-based platforms were preferred.

KEYWORDS: e-assessments, online assessment, faculty preference

INTRODUCTION

Assessment is an essential component of medical education and is designed to evaluate the competency of the examinee in acquisition of knowledge, skills, and attitude as well as for certification or licensing. Depending on the evaluator's goals, the assessment can be formative or summative. Formative evaluation is intended to help students improve by providing feedback on academic performance, whereas summative assessment determines if a student is competent enough to graduate from the course.[1]

During the global spread of COVID-19 pandemic, medical education evolved and adapted to cater the modified needs of students and teachers in the face of prolonged lockdowns and closure of educational institutions. Teaching and didactic sessions were delivered through e-learning formats using software like Zoom, Google Meet, and many others or through recorded lectures on Learning Management Systems (LMS) or Virtual Learning Environments (VLE).[2-6] In addition to delivering educational content online, the assessment practices also needed modification since the lack of physical presence of the students on campus entailed designing assessment strategies with validity while curtailing the use of unfair means. Validity and reliability are indispensable pre-requisites for any assessment exercise [1, 7] Recently, educational effect, feasibility, and acceptability have also been included as essential requirements.[7] Considering the limitations of monitoring students undertaking an exam while not physically present in the examination hall, it becomes difficult to uphold the validity of the assessment process.

Even though online teaching and e-assessment may have been a novel concept for developing countries like Pakistan, these practices were routinely being used in other countries well before the pandemic. In the USA, 30% of students have been reported to learn online.[7] Swan studied the methods of online assessment by examining 73 available courses and found that online discussion was used as a graded activity, while online tests and quizzes comprised 83% and 63% of the evaluation plans, respectively.[1] Other e-assessment options included experimental assignments, problem assignments, journals, projects, and presentations.[8] Gaytan and McEwen identified additional assessment techniques in the online environment. They reported that projects, portfolios, self-assessments, peer evaluations, peer evaluations with feedback, timed tests, quizzes, and asynchronous discussions all contributed towards the effective online assessment of students. They also suggested using a wide variety of regular assignments for evaluating the learning and understanding of students.[9] However, in developing countries like Pakistan where assessment processes have been following the traditional methods of pen and paper with the students undertaking the exam physically at the exam venue, the pandemic and resulting lockdown forced the hand of all educational institutes, including those associated with medical education, to incorporate e-assessment strategies.

Because the majority of faculty were unfamiliar with the platforms and software available for this purpose, training courses were offered by the universities and educational institutes for their faculty to enable them to conduct e-assessments of students utilizing online assessment tools. In a study conducted at the Agha Khan University that analyzed the challenges faced during the switch from a traditional exam mode to a virtual learning environment in the pandemic, it was concluded that effective protocols for e-assessment can only be devised after several trial runs and considering the feedback of all stakeholders. Nonetheless, despite some technical and logistic issues, the faculty was found to appreciate the convenience afforded by the e-assessment process. In addition, the validity and reliability of the assessment scores were also seen to be comparable to conventional exam result.[10]

Universities and higher educational institutes across Pakistan adapted individually to implementation of online assessment. While some institutes installed a VLE or LMS to facilitate the process of e-assessment, others relied on the low-cost versions or freely available online software.[4] Because the COVID-19 pandemic led to frequent lockdowns and hindrances in conducting assessment through conventional practices, it was deemed crucial to examine the strategies and online tools that have been utilized and preferred by the faculty for both formative and summative assessment of students conducted remotely. Currently, no study was found to be conducted related to the preference of assessment tools used by medical and dental faculty, though several studies have investigated the teaching and learning component of the curriculum.[2-5,10-13] Hence, the current study will help to provide evidence for administrative heads and medical education departments regarding the preference of faculty for user-friendly online tools that can be utilized to assess students remotely and for improving, designing, and implementing both formative and summative assessment with the provision of technical training required to utilize these tools and their various features in the best way possible. Therefore, the aim of this study was to assess preference of online assessment tools available to the faculty and utilized by them in medical and dental education for e-assessment of undergraduate students.

THEORETICAL FRAMEWORK:

In 2013, Luis Tinoca proposed a theoretical framework related to four dimensions of e-assessment in higher education. These dimensions include authenticity, consistency, transparency, and practicability. These dimensions have multiple criteria. The requirement to focus assessment on competencies leads to the creation of authenticity. Validity and reliability add to the

consistency of the exam. Transparency is based on the student and his or her engagement in the learning process, while practicability is generated from institutional limits impacting both teaching and evaluation methods.[14]

METHODS

This cross-sectional study was designed to assess the preference of medical and dental faculty of multiple public and private sector institutes of Karachi for different e-assessment tools available online for formative and summative assessment. After receiving "exempt status" from the Institutional Review Board of Jinnah Sindh Medical University, the data was collected through an online questionnaire (See Appendix A, Consent Form). The sample size was calculated through OpenEpi version 3.0, considering that the total population of teaching faculty involved in online teaching from different institutes was 250, keeping confidence interval 95% (a 5% chance of error), the estimated sample size was 152. All faculty members of different institutes pertaining to medical and dental education, who participated in the online teaching and assessment of the undergraduate students during the year 2020 were included. Only faculty members who did not consent to be part of the study were excluded.

The questionnaire was designed specifically for the study with relevant items formulated after extensive literature search, with the first section recording the demographics of the study participants including age, gender, education, specialty, and previous experiences of online assessment (See Appendix B, Demographics). The second section contained items related to online tools preferred by the faculty for e-assessment (summative and formative; See Appendix C, Online Tools Preferences). In addition, items related to hurdles faced by the faculty during e-assessment and their resolution were also included in this section.

The questionnaire was evaluated by two medical education experts for the relevance of the content and then pilot tested on ten faculty members working at Jinnah Sindh Medical University. Five faculty members from the dentistry section and five from the medical section were involved in the pilot process. The questionnaire was modified in the light of the feedback received from the faculty members. After permission form the institutional heads was sought, the Google Form link was shared with a designated coordinator from each institute, to be disseminated with the faculty fulfilling the inclusion criteria belonging to both public and private sector institutes. Convenience sampling was done, and those who consented were included in the study. Data from the pilot test was not included in the results.

RESULTS

Responses were received from 125 faculty members out of 152, giving a response rate of 82%. Data was analyzed through SPSS version 23 and frequency was calculated for different tools used for summative and formative assessment. These results were summarized as tables and figures comparing the preference of medical and dental faculty. Male to female ratio was found to be 1:2, with mean age of the participants being 37.8±9.99 years, and the majority (n=100, 80%) of the respondents having a postgraduate degree. There was a higher number of faculty from the medical program (n=98, 78%), with 58.4% affiliated with private sector institutes. The previous experience of the participants related to e-assessment, prior to the advent of the Covid 19 was reported by 80% of the participants as 'none'. Other demographic details of the participants are shown in Table 1.

Table 1. Demographics of the study participants

Variables	Distribution of Participants
Gender	Male (n=38, 30%)
	Female (n=87, 70%)
Teaching Program	MBBS (n=98, 78%)
	BDS (n=27, 22%)
Area of Teaching	Basic sciences: (n=80, 64%)
	Clinical Sciences: (n=45, 36%)
Prior e-Assessment Experience	Yes (n=25,20%)
	No (n=100, 80%)
Type of institute	Public sector: (n=52, 41.6%)
	Private sector: (n=73, 58.4%)

The online tools that were preferred by the basic and clinical sciences faculty for the formative assessment of the students are given in Table 2. Question and Answer feature of Zoom was the most frequently used tool by both basic and clinical sciences faculty (n=47, 37.6% and n=26, 20.8%) respectively.

Table 2. Online tools preferred by faculty for formative assessment according to domain of teaching

Domain of Teaching	No tools used	Tool used							Total
		Question and Answer (Zoom)	Quizzes	Instant Feedback	White Board	Breakout Rooms	Polls	Drawing Tablet	
Basic Sciences	7	48	38	23	15	8	6	4	80
Clinical Sciences	11	26	18	10	8	3	2	2	45
Total (n, %)	n=18, 14.4%	n=74, 59.2%	n=56, 44.8%	n=33, 26.4%	n=23, 18.4%	n=11, 8.8%	n=8, 6.4%	n=6, 4.8%	125

Table 3. Online tools preferred by faculty for summative assessment according to domain of teaching

Domain of Teaching	No tools used	Tools used							Total
		Socrative	Kahoot	Quizizz	Quizlet	Others	Padlet	Peer deck	
Basic Sciences	30	29	20	5	8	3	1	1	80
Clinical Sciences	20	16	3	5	1	2	0	0	45
Total (n, %)	n=50, 40%	n=45, 36%	n=23, 18.4%	n=10, 8%	n=9, 7.2%	n=5, 4%	n=1, 0.8%	n=1, 0.8%	125

Table 3 indicates the preference of the faculty of basic and clinical sciences for online tools to conduct summative assessment of students. While most of the responses of faculty of both domains showed that they did not adopt any online tools for summative assessment, participants did report the use of Socrative (n=29,23.2% and n=16,12.8%) most frequently for basic and clinical sciences respectively, among the other online software available.
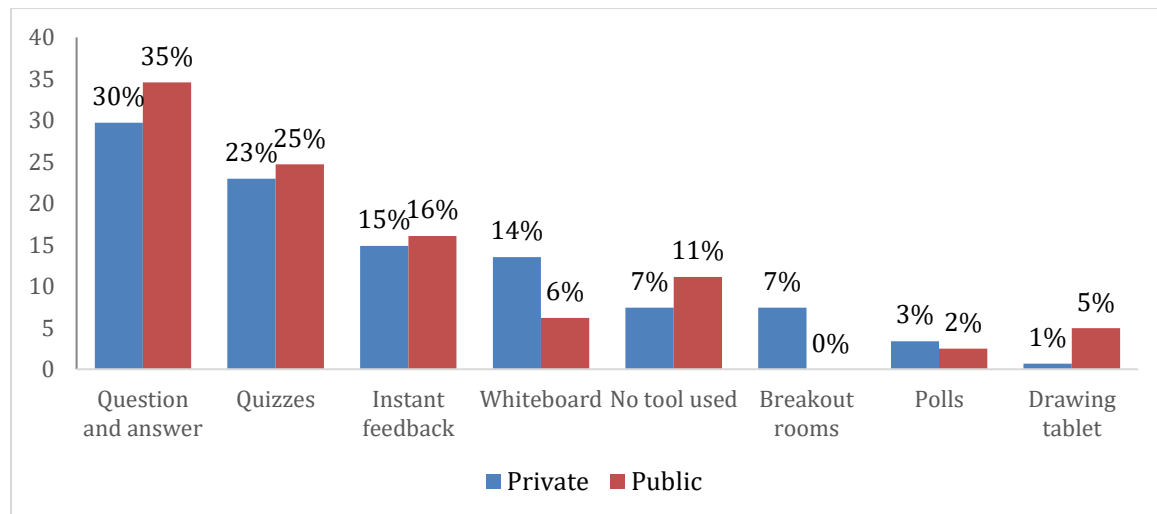

Figure 1. Comparison of preference of online tools used for formative assessment by private and public sector institutes

Figure 1 shows the comparison of the online assessments tools preferred by the faculty of public and private sector institutes for formative assessment. The most preferred tool for this purpose was found to be Question and Answer feature of Zoom by all the faculty irrespective of the type of institute (private sector: n=39, 30%, private sector: n=28, 35%) followed by Quizzes (private

sector: n=34, 23%, private sector: n=20, 25%) and Instant Feedback (private sector: n=22, 15%, private sector: n=13, 16%). Similarly, Figure 2 shows the comparison of online tools favored for summative assessment by faculty in both sectors. Data showed that the majority of faculty from the public sector institutes did not employ any specific tool for summative assessment (n=63, 50.4%) compared to those belonging to private sector institutes. Socrative was the most preferred tool for faculty of private sector institutes (n=38, 30.4 %) followed by Kahoot (n=22, 17.6%), while for the public sector faculty, the highest response for an online tool was for Quizlet (n=12, 9.6%) followed by Socrative (n=10, 8%)
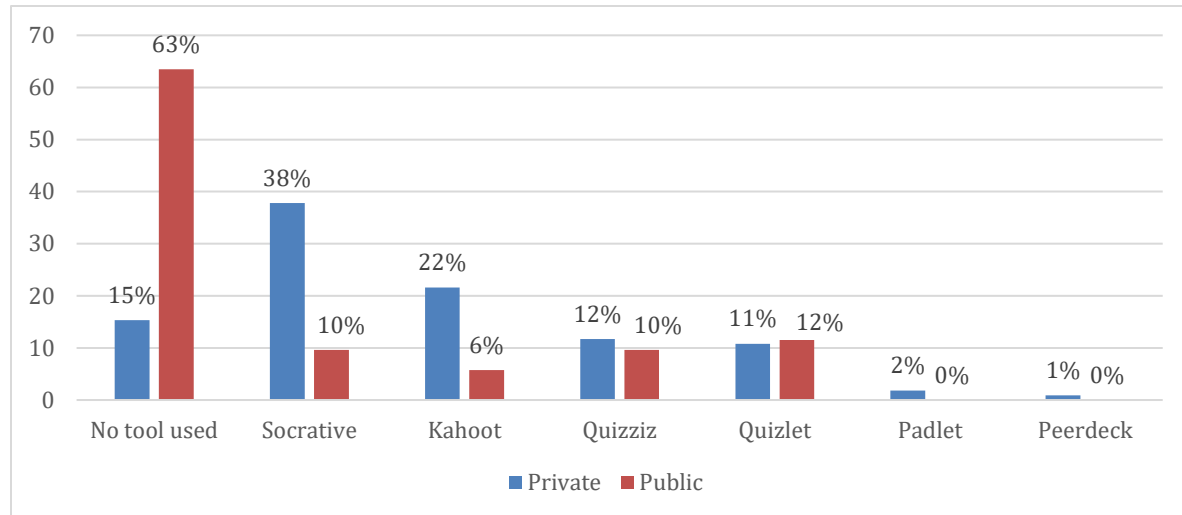

Figure 2. Comparison of preference of online tools used for Summative assessment by private and public sector institutes

Table 4 summarizes the responses of the participants related to the hurdles they faced during conduction of online assessment. Almost 68% of the participants affirmed that they faced difficulty in conducting online assessments. In addition, about 48.2% of the respondents replied that the issues that they faced in this regard were not resolved. The participants who considered the hurdles resolved reported that they were able to do so through the training provided to them by either the department of medical education or the IT department.

Table 4. Responses of the participants related to issues in conducting e-assessments

Items	Responses	
Did you face any difficulty in conducting e-assessments?	Yes (n=85, 68%)	No (n=40, 32%)
Were the issues resolved? (n=85)	Yes (n=44, 51.7%)	No (n=41, 48.2%)
If yes, how were the issues resolved? (n=44)	Training from medical education department (n=27, 61.3%)	
	Training from IT department (n=17, 38.6%)	

DISCUSSION

This study was conducted to determine the preference of faculty of medical and dental undergraduate programs of various public and private sector institutes regarding the use of online assessment tools for formative and summative assessment during the lockdown resulting from the COVID-19 pandemic. During online instruction, it was essential that freely available and easily accessible platforms and tools for distance learning be explored to facilitate the teaching and assessment process of students and to prevent any academic deficit from developing because of the lack of the physical attendance of students on campus. Overall, it was seen that most of the faculty reported a paucity of any prior experience regarding to the use of online assessment tools before the advent of COVID-19. For developing countries, issues related to availability of resources, trained personnel, and reluctance to accept alternate methods of conducting assessments may be the reasons that online formats for evaluating the learning of students have not been explored before.[15]

In general, relatively limited number of faculty members had been found utilizing online assessment tools for any form of assessment.[10] However, the pandemic was the first time that all the institutes had to switch to distance education for course instruction and evaluation in professional courses.[6] In order to prevent the disruption of the academic continuum of various academic programs already in progress within Pakistan, teaching sessions switched to online mode as instructed by the higher education institutes and universities in accordance with the NCOC's (National Command Operation Center Pakistan).[4] However, high-stake exams were conducted on computer in the institute's digital labs, with the students present physically on-campus while being monitored and fulfilling all the SOPs to limit the spread of COVID spread given by WHO and NCOC. The prolonged lockdowns of educational institutions left no choice for the faculty but to adopt e-learning platforms and e-assessment tools for the teaching and assessment of students. Therefore, the faculty started exploring and utilizing already available online assessment software for this purpose. Even though the shift from traditional modes of teaching and assessment to online format was sudden and urgent, studies have shown that faculty were willing to modify their current practices for the seamless transition.[12, 16]

For the continued monitoring of students related to their learning, formative assessment and feedback is essential since it results in improved student engagement and motivation.[17] During lockdowns and restricted physical interaction with the students, the regular practices of providing feedback for the formative assessment were hindered. Most of the online platforms and tools currently available are designed to assist the teacher to assess the student formatively and to provide them immediate and individualized feedback regarding areas where focus of learning should be directed. Other benefits of online formative assessments (OFAs) include ease of access and availability of interesting interactive features for engaging the students.[18]

Studies have shown that students have effectively utilized online formative assessments to prepare for their summative exams, resulting in improvement of their scores, and such tools were also being used by faculty globally well before the lockdowns resulting from the pandemic.[19-21] Learning management systems (LMS) like Moodle have the option of assessment features incorporated within the courses which was found to be used by many higher education institutes for both teaching and assessment.[22] Other communication software including Zoom has features like Question and Answers, which can be used during a live session to engage and assess the students. This feature was found to be most preferred by the faculty of both basic and clinical sciences for the formative assessment of the students and for providing subsequent feedback. In addition, it has been observed that the advent of gaming in software designed for assessment have invoked the interest of students, even in medical education.[22, 23] Platforms like Kahoot, Quizizz, Quizlet and Socrative are widely being used in education based on their ability to engage students and provide rapid feedback. [13]

In addition to formative assessment which strives to improve the learning of the students, summative assessment is also an integral component of the academic process, allowing the evaluation of the pre-requisite knowledge, skill and behavior of the student deemed essential at his/her academic level and determines the students who should proceed further in the academic continuum based on the demonstration of the competencies delineated by regulatory and licensing bodies. Summative assessments need to comply with the principles of validity, reliability, and high fidelity since they are usually high-stake examinations.[7] The necessary guidelines for conducting summative examinations are usually strictly adhered to in normal circumstances. Since the COVID-19 pandemic led to lockdowns even during exam schedule of the students, options related to remote and online methods of assessment seemed the only solution. However, tools developed for the purpose of e-assessment are usually designed to focus on formative evaluation. This makes their use for summative assessment difficult since they have limited or only basic features where high fidelity required for high-stakes summative examinations cannot be achieved, in addition to the inadequate monitoring of students when attempting online exams.

In our study, it was seen that the majority of faculty of both basic and clinical sciences did not opt to use any of the commonly available online tools for summative assessment. In addition, most faculty of public sector institutes did not prefer any tool for summative assessment when compared to private sector institutes. The reason for this finding could be the absence of features in online tools which could cater to such form of e-assessment as required or desired by the faculty, especially in public sector institutes where the number of students in each class is much higher as compared to private sector institutes. This would make online proctoring of students and maintaining the essential determinants of an examination like validity and reliability difficult to ensure. In contrast, virtual learning management systems provided a secure environment for examination addressing the relevant concerns of the faculty. Nonetheless, tools like Quizlet and Socrative were preferred by faculty of public sector institutes since it is quiz based and easy to use.

E-assessments reduce the physical labor of teachers to manually check responses on paper and calculate scores. It also decreases paper waste. Chances of errors is reduced, and data can be saved and retrieved anytime within seconds.[11] However, planning and feasibility regarding e-assessments would depend on the online platform which is available for use, whether it requires a subscription or is free, number of students that could take the exam at one time, timed questions and type of items that could be

incorporated in the exam (MCQ, essay type and short questions etc.).However, its acceptability is dependent upon the prior experience of the faculty with online software, the user-friendliness of the platform, and whether the teacher or student can utilize options as per their requirement.[24] In our study, most of the participants affirmed facing difficulty in conducting e-assessment which could be attributed to all the above-mentioned determinants. Faculty felt that the resolution of the hurdles they faced was through the support and training provided to them by the medical education department or the IT department. This indicates the essential role that these departments play by conducting relevant training sessions for the faculty related to conducting effective e-assessments.[10, 25]

The results of our study showed that overall, currently available online tools of assessment were being utilized by the faculty for conducting formative assessment as compared to summative assessment. However, instead of strictly dichotomizing the assessment process into the labels of formative and summative assessment, online platforms could assist the faculty in allowing the assessment process to focus on the continuous and monitored learning of the students. Online assessment tools can allow the faculty to focus on the meaningful evaluation of the students, instead of implementation of the traditional assessment methods at times where educational outcomes focus on holistic learning of students. However, effective faculty training is required for them to efficiently utilize the available options. Nonetheless, to evaluate the clinical skills of the students in both medicine and dentistry, exams conducted physically seem to be the only feasible solution currently, and until tools and strategies can be developed to conduct these assessments remotely, the relevance of physical face-to-face examination still stands in health sciences.

Strengths of this Study
Strengths of this study are that the preference of the faculty belonging to both public and private sector institutes was sought. The study shows the inclination towards various online tools for formative and summative assessment in both dental and medical faculty teaching either basic or clinical sciences. It also highlights that the faculty faced hurdles during conduction of e-assessment, which would in turn influence their use and preference for online tools. This study also highlights the role of medical education and IT departments in resolving the issues faced by the faculty in this regard.[10]

Limitations
Limitations of the study are that since it is cross-sectional therefore, we cannot evaluate in depth the specific reason behind the preference of the faculty for a specific tool for e-assessment. Hence, a mixed method study could be conducted highlighting the perceptions of the faculty for e-assessment tools, and to determine the reason behind their inclination to use a particular online assessment platform for the evaluation of students. In addition, the precise logistic and/or technical problems faced by the faculty for the effective conduction of such examinations including issues related to training, infrastructure, resources, and the effective achievement of learning objectives could be explored. Another limitation was that the faculty were only asked their preference for the online assessment tool that they had experience of using. Since most software and platforms for assessment that have the feature of monitoring or proctoring of students during summative assessments are available on payment and were not accessible to the faculty through their institutes, hence they could not choose to prefer it over other freely available software. Perhaps another study could compare the change in faculty preference after they are provided the experience of assessing students using proctored e-assessment platforms.

Recommendations for Future Research
It is the opinion of the authors that a follow up study highlighting the problems in remote assessment during the stabilized phase post-COVID should be conducted to determine the hurdles faced during formative and summative e-assessments and evaluate practical solutions which will further shed light on the unravelling world of online education in the local context. Also, regular inclusion of e-learning modules or courses, either optional or compulsory, in the professional educational programs along with online e-assessment options will keep the faculty and the students accustomed to them. It is essential that Universities and higher education institutes develop and facilitate Virtual Learning Management Systems (VLMS) and arrange faculty development sessions and workshops to ensure that their faculty are cognizant with the various useful and engaging features of the currently available online tools to utilize them effectively for the various formats of student assessment. This will increase the productivity, acceptability, and adaptability of the faculty to modify assessment practices. Particular consideration should be given by health sciences institutes to the purchase of e-assessment software that is proctored so that the option of a valid online summative assessment becomes available.

CONCLUSION:
Even though the majority of faculty were not utilizing any online tools and platforms for e-assessment of student before the advent of the COVID-19 pandemic, it was seen that after the lockdown and restrictions imposed by regulatory authorities towards physical attendance of students on-campus, the faculty of both basic and clinical sciences utilized various online tools for the formative and summative assessment of their students. The most preferred tool for formative assessment was found to be the Question-and-

Answer feature of Zoom. Although most of the faculty reported not utilizing any online tool for conducting the summative assessment of students, it was found that quiz-based platforms were preferred for summative assessment, nonetheless. Majority of the faculty faced hurdles in conduction of e-assessment, however relevant issues were resolved by the training offered by medical education and IT departments, highlighting their critical role in enabling the faculty to conduct e-assessment smoothly and efficiently.

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APPENDIX A: CONCENT FORM

"Faculty Preference Regarding Online Tools for Assessment"

Consent:

Dear Teacher,
You are invited to participate in a research study by researchers of Jinnah Sindh Medical University (JSMU), designed to identify your preference for the online tools that you have used and are currently using for the formative and summative assessment of students in your institution during the COVID-19 pandemic. The results of this study will help to identify preferred and user-friendly online tools utilized by the faculty, enabling the administration and medical education department to encourage the faculty to explore the features of such platforms and offer relevant training sessions to them.

This study requires you to complete an online survey that will take less than 10 minutes of your valuable time. This study will give all of us insight and help design good quality online educational activities in the future.

There are no risks attached to this study. Your institution's name and identity will be kept confidential. All data will be reported anonymously without any identifiers. However, any record or data obtained from your participation in this study may be inspected by the JSMU-IRB members.
This would be your voluntary participation without any compulsion, moral or otherwise, and without any financial incentive or coercion. Any new information developed during the study that may affect your willingness to continue participation will be communicated to you. You have the right to withdraw from the study at any time. If you decide to discontinue your participation in the study or for queries related to the study, you can contact the Principal Investigator, Dr.Syeda Zarreen Raza, at zarreen.raza@jsmu.edu.pk.

AUTHORIZATION:
I have read and understood this consent form, and I volunteer to participate in this research study. I voluntarily choose to participate, but I understand that my consent does not take away any legal rights in the case of negligence or other legal faults of anyone involved in this study.

Signature of the Participant   **Signature of the Investigator**

APPENDIX B: DEMOGRAPHICS

Demographics:

- Age:
- Gender:
- Area of Teaching: Basic sciences / Clinical Sciences
- Type of Institution: Public / private
- Prior e-assessment experience before COVID-19   Yes/ No

APPENDIX C: ONLINE TOOLS PREFEENCES

Q1: Which of the following online tools do you prefer for Formative assessment? **(Select one)**
   a. Breakout rooms
   b. Drawing tablet
   c. Instant Feedback
   d. Polls
   e. Questions & answer
   f. Quizzes
   g. Whiteboard
   h. No tool used
   i. If used other than above list (Please mention)

Q2. Which of the following online tools do you prefer for Summative assessment? **(Select One)**
   a. Kahoot
   b. Padlet
   c. Peer deck
   d. Quizlet
   e. Quizziz
   f. Socrative
   g. No tool used
   h. If used other than above list (Please mention)

Q3. Did you face any difficulty in conducting e-assessments?

        Yes /No

Q4. Were the issues you faced resolved?

        Yes /No

Q5. If yes, how were the issues resolved?

   a. Training from Medical Education Department.
   b. Training from IT Department