

Multiple Mini-interviews for Medical Students' Admissions: Students and Faculty Perceptions on Acceptability and Feasibility

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ABSTRACT

Aim: To evaluate the acceptability and feasibility of the multiple mini interviews for selecting medical students for admission in a medical institution.

Methods: The current cross-sectional descriptive study is a 12-item questionnaire-based survey with a four-point Likert scale to record the anonymous responses of the candidate students' and the interviewer faculty perceptions. Descriptive statistics were used to analyze the data quantitatively with IBM SPSS Version 25. The study evaluated the acceptability and feasibility of the utility of multiple mini-interviews (MMIs) as an assessment tool for the medical students' selection in the admission process at Avicenna Medical College, Lahore, Pakistan.

Results: A total of 438 candidate students and 42 interviewer/assessor faculty members participated in the study. Most of the candidate students (92.2%) of candidates and 97.6% of interviewer faculty regarded MMIs better than the traditional interviews for the selection of medical students. Further, 99.4% of candidate students and 97.6% of interviewer faculty were satisfied with the MMI process's general arrangements. Finally, a hundred percent interviewer faculty and 96.8% of candidate students perceived MMIs as a feasible assessment tool for the admission process of the medical institutions.

Conclusion: The overall positive responses of the candidate students and the interviewer faculty for the acceptability and feasibility of the MMI process as an assessment tool in the admission process to select medical students provide evidence for future research on the use of MMIs. In addition, other medical institutions can adapt or modify the MMI process per the available finances and resources within their local settings.

Keywords: Multiple mini-interviews, Medical college admission process, acceptability, feasibility.

INTRODUCTION

Over the last few decades, innovative, evidence-based strategies evolved in medical education to better prepare the medical graduates for the constantly changing twenty-first-century healthcare system. Likewise, for standardization of the medical college admission process, the traditional interviews for selecting medical students were revolutionized in 2002 at McMaster University by pioneering a new technique, the multiple mini-interviews (MMI)¹. Since then, the world over, medical institutions have used MMIs in the admission process.

The admission criteria for medical institutions include the pre-medical academic scores, the medical and dental college admission test (MDCAT) scores, and traditional interviews to select the students for undergraduate medical education in most countries, including Pakistan. In addition, however, considering the obligations of the medical profession, non-cognitive traits like interpersonal skills, communication skills, and professionalism need to be assessed for the selection of medical students².

The literature review on the admission process for health professionals showed MMIs an efficient and effective tool to predict academic performances³ and assessment of personality traits aligned to healthcare⁴. Further, the key findings of the systematic literature review (SLR) by Pau et al⁵ found MMIs an acceptable, feasible, reliable, and valid tool for selecting health professional students. The particular advantages of MMIs are providing a structured multiple sample approach to interviews, reducing the interviewers' bias and problems associated with context specificity⁶.

The MMIs adapt to the format of objective structured clinical examinations (OSCEs) with usually 10-stations, and the stations' designs reflect the institutional values aligned to their respective vision and mission⁷. In general, the MMI scenarios are situation-based questions to test the applicants' interpersonal skills, communication skills, critical thinking, decision-making, ethics, and

professionalism⁸. The reliability of MMIs improves with an increase in the number of stations, interviewers' training, effective scenario development, and scoring procedures⁹.

In Pakistan, before the admissions of 2020, the prospective undergraduate medical students seeking admission in public or private medical colleges had to apply through the 'Central Induction Policy' operated by the Provincial Specialized Healthcare and Medical Education Department through the Public Medical Universities¹⁰. The applicant's scores of the HSSC Part-II/ Pre-Medical (FSc) examination by the Boards of Intermediate and Secondary Education (40%), MDCAT (50%), and Matriculation (10%) generated a combined merit list for admissions in medical institutions.

The regulatory authority Pakistan Medical Commission (PMC), in the academic year 2020, allowed the A Grade private medical colleges to formulate their merit criteria for admissions¹¹. Resultantly, in addition to Pre-medical HSSC/FSc and MDCAT, most medical colleges allocated about 20% or more weight for their selection of medical students in the form of written aptitude tests, traditional interviews, and MMIs. Therefore, in compliance with the PMC regulations, the Admissions Committee at Avicenna Medical College, a private medical college, decided to allocate 20% marks to the MMIs in the admission process for the academic year 2020-21.

The search for evidence from Pakistan showed a scarcity of research on MMIs in Pakistan. The previous researchers in a similar context were that most medical institution MMIs had not adopted the MMIs in admission processes¹². However, we were encouraged by the review of evidence on analysis on MMIs that showed stakeholders' satisfaction and a positive impact¹³. Moreover, it was the first time our institution decided to conduct the MMIs in the admission process 2020, rather than the written aptitude tests and traditional interviews¹⁴. However, further evidence suggests that institutional studies are needed to characterize the interview practices and outcomes¹⁵. Therefore, it was significant to explore the interviewees' and the interviewers' perceptions on the acceptability and feasibility of MMIs. So, we deliberated the current study to examine the perceptions of the

Received on 24-06-2021

Accepted on 13-11-2021

interviewer/assessor faculty and applicant interviewee students to determine the acceptability and feasibility of MMIs.

Research question: Q. Do the interviewer/assessor faculty and candidate students consider Multiple Mini Interviews (MMIs) acceptable and feasible for the admission process to select medical students for undergraduate medical education?

METHODS AND SUBJECTS

The current cross-sectional descriptive study was conducted at Avicenna Medical College, Lahore, from November 2020 to February 2021. The research was approved by the Ethical and Institutional Review Board (ERB & IRB). Written Informed consent of the participants was taken to explore the perceptions of the faculty assessors and the applicant candidate students' perceptions of the acceptability and feasibility of MMIs for the admission process in the academic year 2020-21 at Avicenna Medical College. This institution is a private medical college located in Lahore, Pakistan, affiliated with the University of Health Sciences (UHS). It was the first time that the institution was conducting MMIs.

In the academic year 2020-21, the institution received more than two thousand admissions applications in the 5-years MBBS program; seven hundred applicants were shortlisted based on academic merit, whereas 450 appeared in MMIs. However, some candidates declined to participate in the informed consent process. Therefore, the study participants were the 438 applicants shortlisted for admission at Avicenna Medical College and the fifty faculty members trained to interview and assess MMIs. The participant students filled the evaluation post-MMI questionnaire to complete the MMI circuit of 10-stations. The faculty assessors filled the post-MMI questionnaires at the end of all the MMIs circuits for that day.

The development process of MMIs was initiated with a thorough review of the literature, followed by comprehensive training workshops of the basic sciences and clinical faculty by external and internal experts. Finally, the Admission Committee of Avicenna Medical College was approved and included the Principal, Chairpersons, medical education faculty, basic sciences, and clinical sciences faculty. They worked for about six weeks in repeated iterative meetings to select, refine, and approve the attributes essential for future physicians and developed the scenarios and the scoring rubrics for MMIs. Further, they postulated clear instructions for the applicant interviewee and the interviewers/assessors at each station. The list below shows the attributes assessed at OSCE the stations;

1. Communication skills
2. Empathy
3. Critical thinking
4. Teamwork
5. Motivation
6. Resilience and adaptability
7. Ethical decision-making

The committee designed the blueprint for the MMIs circuits, demonstrating the structural and functional organization. They further developed a booklet with about 140 scenarios and questions with the scoring rubric for the OSCE-type stations. Finally, the selected basic sciences and clinical sciences faculty received training as assessors for MMIs in consecutive workshops with hands-on practice¹⁶. The admission committee conducted four training workshops between 16th – 30th November 2020, about six weeks before admission. Each workshop was a 3-hours duration, and each OSCE-type question was tested with mock MMIs and was modified as required. Finally, the entire course of each MMI OSCE circuit was approved as 60 minutes, allocating 6 minutes to each station, out of which one minute for the candidate to read the question and the scenario, whereas five minutes for interaction with the assessors or to record responses.

Furthermore, after a detailed literature review and expert consensus, the researchers self-designed the post-MMI

questionnaire to evaluate the acceptability and feasibility of the MMIs process, piloted the questionnaire in mock MMI with fifty participants, and calculated the Cronbach's alpha. Resultantly, the researchers changed the wordings of the three items and decided to use the same questionnaire for the interviewee students and the faculty interviewers/assessors to record their responses.

The candidate students and the interviewer assessors were explained verbally about the study, and written informed consent for participation was taken and were requested to fill the post-MMI questionnaire anonymously. The questionnaire had 12-items with a four-point Likert scale to record the responses. Finally, the researchers quantitatively analyzed the responses with IBM SPSS Statistics version 25 for reporting the results.

Ethical approval: The Ethical Review Board and the Institutional Review Board (ERB & IRB) of Avicenna Medical College, Lahore, approved the study and written informed consent was taken from the participant candidate students and the interviewer faculty.

RESULTS

In 2020, Avicenna Medical College, Lahore received more than two thousand admissions applications for the 5-years MBBS program; seven hundred applicants were shortlisted based on academic merit, whereas 450 appeared in MMIs. Out of these, 438 consented to participate in the study and filled the anonymous post-MMI questionnaire. In addition, a total of fifty trained faculty members assessed MMIs; out of these, forty-two consented to participate in the current study and recorded responses on the post-MMI questionnaires.

The participants recorded their responses to the 12-items of the post-MMI questionnaire on the four-point Likert scale; weightage was given to responses as 1 to 4 from strongly agree, agree, disagree, to disagree strongly. We used the IBM SPSS version 25 to conduct the statistical analysis of the participants' responses. First, the descriptive analysis was performed by calculating the number and percentages of the responses to each item. Further, the range and mean score from the minimum and maximum values on the four-point Likert scale were determined. Additionally, the standard deviation and variance were calculated. Table 1 and Table 2 show the descriptive analysis of the responses of the interviewee students and the faculty interviewer assessors' responses to the 12-items of the post-MMI questionnaires.

In response to the question on general arrangements, most of the candidates (99.4%) liked the MMIs arrangements (mean value 1.39±0.50); likewise, 97.6% of faculty assessors were satisfied (mean 1.54±0.55). In addition, both the candidates (96.8%) and the faculty (97.7%) agreed that they clearly understood and could follow the pre-MMI instructions. However, 105 students (24%) disagreed strongly, and 183 (41.8%) disagreed that their pre-medical academic record shortcomings adversely affected their performance. In contrast, 40.5% of faculty assessors strongly agreed, and 42.9% agreed (total 83.4%) that deficiencies in the educational background adversely affected the candidates' performance.

Regarding the questions on the appropriateness of the stations, most candidates (92.3%) and assessors (97.6%) responded positively to the adequacy of the number of stations in each circuit. Furthermore, 96.1% of candidates and 100% of assessors responded that they clearly understood the instructions on the stations. The essential question to explore is if the participants considered the scenarios culturally contextual. The entire faculty assessors (100%) and most of the candidates (95.2%) perceived that the questions and scenarios were culturally relevant; however, a few students (4.8%) disagreed. Finally, the critical question on the adequacy of time for the candidates to perform at the OSCE stations showed that most of the candidates (77.6%) and 78.6% of assessors felt the inadequate time allocated at the stations.

The candidates and the assessors responded positively to the questions specific to the MMI process. Most candidates (97.1%) with a mean value of 1.45 ± 0.56 and 95.3% of assessors (mean value 1.64 ± 0.57) showed confidence in the interviewing skills of the faculty conducting MMIs. For responding to the crucial question on comparing the MMIs and the traditional interviews, 92.2% of candidates (mean value 1.50 ± 0.64) and most of the assessors (97.6%) rated MMIs better than the traditional interviews (mean value 1.45 ± 0.55). On further exploration of the perceptions on the MMI experiences, interestingly, 76.3% of candidates and 64.3% of assessors opined that their MMI performance could predict the students' success in their medical career. Furthermore, both the students and the faculty responded positively to the question on the effect of the MMI experience of the day on the candidates' motivation for the improvement of soft skills, and

97.7% of candidates (mean value 1.38 ± 0.54) felt that they were motivated to improve their soft skills. Likewise, 90.5% of faculty responded (mean value 1.59 ± 0.66) that MMI experience will encourage the students to enhance their soft skills.

Lastly, the questionnaire inquired about the feasibility of MMIs as an assessment tool in the admission process of the medical colleges from the participant candidates students and the interviewer/assessor faculty. In response to this crucial question, 96.8% of candidates and a hundred percent assessors responded affirmatively. Overall, the participant candidate students and the faculty assessors who completed the post-MMI questionnaire-based survey positively rated their experiences regarding the acceptability and feasibility of the MMI process conducted at our institution.

Table 1: Descriptive analysis of the Candidate Students Responses to the Post-MMI Questionnaires.

Descriptive Analysis of the Candidate Students Responses									
No	Questionnaire Items	No.	Strongly Agree 1	Agree 2	Disagree 3	Strongly Disagree 4	Mean Score	St. Deviation	Variance
1	I liked the general arrangements of the interviews.	438	267 (61%)	168(38.3%)	3(.7%)	0 (0%)	1.39	0.50	0.25
2	I clearly understood the MMI process at the initial briefing.	438	285 (65.1%)	139(31.7%)	12 (2.7%)	2 (0.5%)	1.38	0.56	0.32
3	I think shortcomings in my educational background affected my performance adversely.	438	34 (7.8%)	116 (26.5%)	183 (41.8%)	105 (24%)	2.81	0.88	0.78
4	I guess the number of stations was adequate.	438	176 (40.2%)	228 (52.1%)	28(6.4%)	6 (1.4%)	1.68	0.65	0.42
5	I found the instructions on each station satisfactory.	438	257(58.7%)	164 (37.4)	17(3.9%)	0 (0%)	1.45	0.57	0.33
6	I experienced the scenarios/questions culturally appropriate.	438	236 (53.9%)	181 (41.3%)	20 (4.6%)	1 (0.2%)	1.51	0.59	0.36
7	I did not have adequate time to respond at most stations.	438	24 (5.5%)	74 (16.9%)	184 (42%)	156 (35.6%)	3.07	0.86	0.74
8	I think the interviewers were skilled.	438	253 (57.8%)	172 (39.3%)	12 (2.7%)	1(0.2%)	1.45	0.56	0.33
9	I rate MMI better than the traditional interviews.	438	254 (58%)	150 (34.2%)	33 (7.5%)	1 (0.2%)	1.50	0.64	0.41
10	My performance on MMI shall predict my success in my medical career.	438	134 (30.6%)	200 (45.7%)	85 (19.4%)	19 (4.3%)	1.97	0.82	0.67
11	I am motivated from today's experience to improve my soft skills.	438	279 (63.7%)	149 (34%)	9(2.1%)	1(0.2%)	1.38	0.54	0.29
12.	In your opinion, is the MMI process feasible to be incorporated in the medical college admission process?	438	284 (64.8%)	140 (32%)	12 (2.7%)	2 (0.5%)	1.37	0.55	0.33

Table 2: Descriptive analysis of the Assessors Faculty Responses to the Post-MMI Questionnaires.

Descriptive analysis of the Assessors Faculty Responses									
No	Questionnaire Items	No.	Strongly Agree1	Agree 2	Disagree 3	Strongly Disagree4	Mean Score	Standard Deviation	Variance
1	The general arrangements of the MMI station were satisfactory.	42	20 (47.6%)	21 (50%)	1 (2.4%)	0 (0%)	1.54	0.55	0.30
2	I clearly understood the MMI process at the initial briefing.	42	28 (66.7%)	13(31%)	1 (2.4%)	0 (0%)	1.35	0.53	0.28
3	I think shortcomings in educational background affected the applicant's performance adversely.	42	17 (40.5%)	18 (42.9%)	6 (14.3%)	1 (2.4%)	1.78	0.78	0.61
4	The number of stations was adequate.	42	25 (59.5%)	16 (38.1%)	1 (2.4%)	0 (0%)	1.42	0.54	0.30
5	Instructions on each station were satisfactory.	42	23 (54.8%)	19 (45.2%)	0 (0%)	0 (0%)	1.45	0.50	0.25
6	The scenarios/questions were culturally appropriate.	42	28 (66.7%)	14 (33.3%)	0 (0%)	0 (0%)	1.33	0.47	0.22
7	The candidates did not have adequate time to respond at most stations.	42	2 (4.8%)	7 (16.7%)	18 (42.9%)	15 (35.7%)	3.09	0.84	0.72
8	The interviewers were adequately trained for the MMI session.	42	17 (40.5%)	23 (54.8%)	2 (4.8%)	0 (0%)	1.64	0.57	0.33
9	I rate MMI better than the traditional interviews.	42	24 (57.1%)	17 (40.5%)	1 (2.4%)	0 (0%)	1.45	0.55	0.30
10	The candidates' performance in MMI shall predict their success in their medical careers.	42	10 (23.8%)	17 (40.5%)	14 (33.3%)	1 (2.4%)	2.14	0.81	0.66
11	In my opinion, the MMI session experience will motivate the candidates to improve their soft skills.	42	21 (50%)	17 (40.5%)	4 (9.5%)	0 (0%)	1.59	0.66	0.44
12.	In your opinion, is the MMI process feasible to be incorporated in the medical college admission process?	42	25 (59.5%)	17 (40.5%)	0 (0%)	0 (0%)	1.39	0.48	0.23

DISCUSSION

Medical education is shifting to a holistic approach for medical student selections and admissions in medical institutions. Resultantly, the recent selection criteria include assessing the non-cognitive abilities in addition to the pre-medical academic scores of the applicants, making multiple mini interviews a viable assessment tool for the admission process¹⁷. To eliminate the interviewers' bias and at the same time assess the interpersonal and intrapersonal skills of the applicants desirous of becoming physicians, Avicenna Medical College decided to use MMIs in the academic year 2020 admission process. This study aims to

explore the candidate students' and the faculty interviewers'/assessors' perceptions on the acceptability and feasibility of the MMI process.

Extensive training interviewers and assessors on the OSCE-type MMI stations format and the standardized station-specific scoring rubrics are associated with improved MMI process¹⁸. Therefore, the Admission Committee at Avicenna Medical College developed the booklet with 140 scenario-based OSCE-type questions and trained the faculty as interviewers and assessors in four workshops of three hours duration over two weeks. This transition from the traditional interviews to the structured MMIs was a time-consuming and challenging task. However, despite the

training, some degree of interviewer subjectivity remains that affects the applicant's score and the admission decisions¹⁹. We explored this aspect in our study, and the candidate students and the interviewers' faculty opined confidence in the interviewers' skills and training in MMIs.

The present study focused on the acceptability of the MMIs by the participants, explored the MMI process regarding the general arrangement, pre-MMI briefing, content, adequacy of the number of stations, and clarity of instructions for the candidates at the MMI stations. With few exceptions, most candidate students and the interviewer faculty positively rated these aspects of the MMI process, possibly because the faculty was well-rehearsed and had practiced the conduct of the stations before actual MMIs. In addition, the OSCE-type questions for the stations were read, discussed, and modified for easy comprehensibility by the admission committee during the development of the booklet and further improved by the faculty during MMI training. Our findings were similar to the researchers' experiences, where thorough preparation and blueprinting of MMI circuits was associated with candidate students' and faculty interviewers' satisfaction with the MMI process²⁰.

Reiter and Eva, in their study, emphasized that the construction, content, and format of MMI scenarios must reflect the local needs²¹. In the current study, the medical education faculty and basic and clinical sciences carefully developed the culturally relevant and contextual MMI scenarios. In the post-MMI survey, all the assessors endorsed that they found the scenarios culturally contextual; however, 4.8% of candidate students disagreed. Therefore, the construct of the MMI scenarios must reflect not only the institutional vision and mission but also the local socio-cultural and socioeconomic needs²².

The analysis of the candidates and the interviewers' perceptions on the adequacy of the time allocated for the candidate's performance in the OSCE-type stations both responded that the time was inadequate. The present quantitative analysis did not explore the reason and the participants' preferred time allocation. However, evidence from the previous studies suggests that the interviewers prefer a shorter duration of time allocation to the MMI stations. In contrast, the candidates desire a more extended period to perform at the stations²³. However, evidence from studies on psychometrics shows no effect on the reliability of MMIs with shorter time durations with the more significant number of stations, though it may affect the candidates' performance²³.

The MMI process rotates the applicants through several stations strategically designed to assess the desired interpersonal and intrapersonal characteristics, allowing a more thorough screening, which remains deficient in traditional interviews²⁴. Additionally, the MMIs compensate for the interviewer bias with assessments by multiple interviewers, showing better reliability than traditional interviews²⁵. Our study showed similar findings, and most of the candidates and the interviewers viewed MMIs better than the traditional interviews.

Although the pre-medical academic scores are a significant predictor of the future success of applicants in medical studies, evidence shows a positive correlation between MMI scores and academic success in medical school²⁶. In our research, the applicants opined that their MMI performance could predict their future academic success, whereas the faculty interviewers were equivocal to this query. Furthermore, to whether MMI experience motivates the applicants to improve their soft skills, most of the students and the faculty responded positively; however, previous studies state that it depends on the inherent personality traits of the applicants^{9, 27}.

Finally, the findings of the SLR by Yusoff reported that MMI showed high acceptability and feasibility in the studies from 11 countries, including Canada, the United Kingdom, the United States, Australia, Germany, Ireland, the United Arab Emirates, Japan, Pakistan, Taiwan, and Malaysia²⁸. Although Several western countries adopt MMIs, individual institutions modify their

format according to individual medical institutions' financial and resource capacity. Despite the initial apprehensions on the acceptability of MMIs in the admission process and potential feasibility issues. In our study, both the candidates' students and the interviewer faculty perceived MMIs as acceptable and feasible for medical students' selection for admission in medical institutions.

CONCLUSION

The present study shares the innovative experiences of introducing MMIs as an assessment tool for medical students' selection in a private medical college of Pakistan. It was the first time our institution utilized MMIs in the admission process instead of the earlier written aptitude test and traditional interviews. The study findings showed that the candidate students and the interviewer/assessor faculty took the MMI process well, demonstrating high acceptability and feasibility. This research provides relevant evidence for future researchers to standardize the admission process in health professional education. In addition, other medical institutions can adapt or modify the MMI process per the available financial and resource capacity within their local settings.

Limitation of the study: Our study evaluated the acceptability and feasibility of the MMIs process through the candidate students' and interviewer faculty perceptions from a single institution which restricted the generalizability. A multi-centric study will strengthen the evidence. Secondly, the study surveyed the perceptions of the participants using questionnaires for the students and faculty; however, an in-depth qualitative study would have provided richer evidence. Further, we explored the acceptability and feasibility of the MMI process, but analysis of psychometric properties for validity and reliability needs to be performed. Finally, more research is required to explore MMI's effective educational contribution to important non-cognitive outcomes related to personal values, professional conduct, and patient care. Ongoing research by the authors considering these limitations will further refine the results.

Declaration of interest: The authors have no conflict of interest to declare

Source of Funding: The study was not funded by any grant.

Acknowledgment: The authors thank the Co-Chairperson Dr. Fazilda Nabeel, the Admission Committee, and the faculty members of Avicenna Medical College, Lahore, Pakistan for organizing MMIs and active participation in this study.

Authors' contributions: GW and SZ initially conceived this work, and GW, SZ, YB, MZ, and SA contributed to the research design. SZ, MZ, and SA undertook all the data collection. YB, MZ, and SA contributed to data analysis and interpretation. Finally, GW and SZ drafted the manuscript. All authors read and approved the final version of the manuscript.

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