ORIGINAL ARTICLE

Stake Holders' Opinion of Multiple Mini Interviews (MMI) for Selection of Medical Students in Pakistan

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ABSTRACT

***Background and Objective*:** In 2002 Multiple Mini Interview (MMI) was introduced to assess the non-cognitive and/or high cognitive traits. Shalamar Medical and Dental College (SMDC), Lahore encouraged the process of MMI resulting in implementing and piloting the process from 2015. Acceptability is considered as the important aspect to support the validity evidence and since MMI was conducting the very first time in Pakistan for undergraduate admission, it was important to address its acceptability. The objective of this study is to assess the stake holder's acceptability for Multiple Mini Interviews (MMI) for the selection of medical students.

Methods: This was a cross-sectional study and data was collected at SMDC Lahore, in years 2015 and 2016. The research sample included candidates who applied for the admission in SMDC and examiners, trained faculty of SMDC involved in process MMI for 2015 and 2016. Acceptability of MMI was determined using post-MMI survey through questionnaire with 5-point Likert scale. Data was analysed using Statistical Package for the Social Sciences (SPSS) 20.0. Demographics were determined. Means, standard deviations and frequencies for each statement of the questionnaire were calculated. Mann-Whitney U-test was applied on the similar statements of the questionnaire among the candidates and examiners for both years separately.

***Results*:** In post-MMI survey most of the statements showed more than 80% acceptability for MMI among stake holders for both 2015 and 2016. Comparison of similar statements among candidates and examiners revealed no significant difference except asked about the time duration (5 minutes) was enough to assess the attributes (P=0.003 & P=0.001) for both years 2015 and 2016 respectively.

Conclusion: Study provided the evidence of stake holders' (candidates and examiners) acceptability of MMI in medical schools' admission. It reflected that they are contented with the process.

KEYWORDS: Multiple Mini Interview, Stake Holders, Acceptability.

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INTRODUCTION

For decades medical schools around the world are involved in debate about making admission criteria a dynamic process. The idea behind these efforts is that medical graduates cannot be considered as

competent doctor if they do not possess key personal attributes like communication skills, team working abilities, empathy and integrity other than academic excellence.[1,2] This requirement of developing competent doctor in holistic sense along with low attrition rate in medical school emphasizes the admitting authorities to be more thorough in designing their admission policies.[3]

Evidence suggests that assessing both cognitive and non-cognitive abilities during assessment procedure is a must requirement for selecting prospective medical students. Cognitive abilities are assessed by previous academic achievement and written tests like the Medical College Admission Test in North America (MCAT), Graduate Australian Medical Schools Admission Test in Australia (GAMSAT), and United Kingdom Clinical Aptitude Test (UKCAT). Academic achievements have proven predictive power followed by mixedevidence of predictive ability of these tests.[4,5,6]

For the assessment of non-cognitive attributes in prospective medical students, the used assessment tools are reference letters, co-curricular records and written personal statements. All of which show low reliability.[7,8,9] Similarly the interviews also become questionable once its reliability and predictive ability is discussed.[10]

Eva et al.[11] in 2004 introduced Multiple Mini Interview (MMI) to assess the non-cognitive and/or high cognitive traits. Like OSCE, it consists of multiple stations that are designed to assess the key personal attributes like ethical decision making, critical thinking, communication skill and the knowledge of the health care system. Research on MMI has proven its strong psychometric properties. This includes establishing validity of the tool by assessing its reliability, feasibility, and acceptability by stake holders.[11]

Shalamar Medical and Dental College (SMDC) since its inception has conducted structured interviews as part of its students' induction process. Strong support for the multiple mini interview (MMI) used in medical school admissions, led to development and piloting the MMI to measure professionalism potential in applicants.[12-14] This is continued till 2017 when Pakistan Medical and Dental Council (PMDC) pass the ordinance to abolish the rights of individual admitting authorities for conducting interviews.[15]

Apart from the proven psychometrics of MMI, acceptability is consideredas an important pillar in the process of establishing validity evidence and as the use of MMI in Pakistan is a new development, acceptability is an important issue that should be considered at all time. Acceptability of the MMI accounts for the acceptance and the perception of the two main stake holders: interviewer (faculty) and interviewee (applicants for medical school). In light of the experience of MMI conducted at SMDC, the current study would share the process of conducting MMI. It will also elaborate its acceptability thatwould further emphasize the rights of individual admitting authorities based on their own cohort selection criteria.

METHODS

This study was conducted at SMDC from November 2015 to December 2016, after approval from Institutional ethical board vide Letter No. SMDC/ Ortho/15-12/452. Informed written consent from all participants was taken. MMI Stations were developed in such a way that they allow candidates to display an ability to think logically through a topic and communicate their ideas effectively. Careful blueprinting was done, based on literature and series of meetings among Department of Medical Education and Admission committee. The key competencies finalized that could be assessed during MMI were "Communication Skills, Critical Thinking, Empathy, Ethical Decision Making, Motivation and Team Work."

Content-specific situations were used to develop stations based on competencies identified in the blueprinting process. With the input from behavioural psychologist and, medical educationist, stations were developed thatincluded station content (scenario and background information), scoring rubrics and instructions to candidates as well as interviewers.

The faculty from clinical and basic sciences were inducted as interviewers. Two cohorts were examined for assessors' acceptability (n = 77 for 2015), (n = 62 for 2016). Interviewers were trained about process and assessment criteria in a mandatory 2-hour station specific training session, 15 days prior to the MMI. Acceptability of MMI from participants' perspective was recorded after

MMI session by an acceptability survey. For 2016 cohort, acceptability survey was adapted from post MMI survey used by Ali et al.[16] whereas for 2015 cohort, secondary data was used as it has been published for assessing training evaluation.[16]

To quantify the acceptability of the process, two cohorts (2015 & 2016) of applicants (n = 333 for 2015) & (n = 627 for 2016) were inducted. Short listed candidates were invited for MMIaccording to the screening criteria by college admission committee. Acceptability of MMI from candidates' perspective was recorded after MMI session by an acceptability survey; it was adapted from post MMI survey used by Campagna-Vaillancourt et al.[17]

Following the process of OSCE, we developed 6 stations in a circuit. Each applicant moved through the same set of stations and was assessed by a single interviewer at each station. There wereeight sessions in a single day in two parallel circuits. At each station, the applicants were required to read the information displayed on the door for 2 minutes. They were then required to enter in room and discussed his/her response with the interviewer for 5 minutes. Each interviewer assessed applicants in two sessions and then other faculty member replaced them to conduct the next two sessions. After the completion of sessions assigned tothe faculty members, they were invited to complete the interviewer acceptability questionnaire.

The level of acceptability was assessed on paper-based acceptability survey. Response to the closed ended question were recorded on a 5-point scale (1-strongly disagree to 5-strongly agree). Qualitative comments were collected by asking the most liked and least liked aspect of the process.

STATISTICAL ANALYSIS

Data was analysed using Excel 2007 and Statistical Package for Social Sciences (SPSS) for the year 2015 and 2016 separately. Analysis method includes computing descriptive statistics to present distribution of study participants (assessors& candidates) by gender. Responses for each of the post MMI survey questions on 5-point Likert scale for both assessors and candidates separately were analysed for descriptive statistics. Non-parametric Mann-Whitney U-Test for ordinal data was used to test potential difference among assessor and candidates for each common item. Responses between comparison groups were considered to be significant with P-value < 0.05. Mean ± SD was calculated to report which group (assessor or candidate) could be considered as having the higher acceptability for each common statement among assessor and candidates.

RESULTS

A total of 77 assessors and 333 candidates participated in the study in the year 2015. Among the assessor 41.6% were females and 58.4% were males. Among the candidates 54.1% were females and 45.9% were males (**Fig.1**)

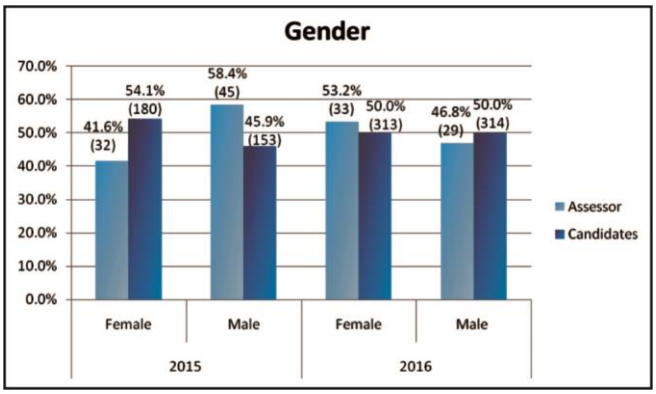

Fig.1: Gender distribution among assessors and candidates for the year 2015 and 2016.

A total of 62 assessors and 627 candidates participated in the study in 2016. Among the assessor 53.2% were females and 46.8% were males. Among the candidates 50% were females and 50% were males (**Fig.1**).

Assessors' acceptability data for the cohorts of 2015 and 2016, presented in **Table-1** indicates the mean, standard deviation and percentage of agreement (acceptability) for Post MMI survey (data for the cohort of 2015 has already been published in terms of sum of ranks).[16]Majority of the assessor agreed upon the all the statements of post MMI – Survey for acceptability in both the years.

Table-2 indicates the mean, standard deviation and % of agreement (acceptability) for Post MMI survey of candidates. Applicants' rated high on all items in both year except for item number 11 that showed the least rating for 2015 (67.9%) and 2016 (66.5%).

Table-1: Acceptability of MMI (Assessors): Descriptive analysis.

Q.#	Statements	2015 (n = 77) Mean ± Std. Deviation	2015 (n = 77) % Agreement	2016 (n = 62) Mean ± Std. Deviation	2016 (n = 62) % Agreement
1.	I was able to effectively differentiate between applicants.	4.10 ± 0.77	89.6%	4.02 ± 0.70	85.5%
2.	MMI helped to showthe strengths and competitiveness of every candidate.	4.22 ± 0.84	88.3%	4.05 ± 0.84	79.0%
3.	Time duration (Five minutes) was enough to assess the attribute to be evaluated.	4.14 ± 0.98	83.1%	4.06 ± 0.83	83.9%
4.	Time duration (two minutes) was enough for me to complete the evaluation form between applicants.	4.31 ± 0.82	90.9%	4.08 ± 0.93	82.3%
5.	The rubrics/criteria and assessment form for applicants was clear and easy to use.	4.16 ± 0.79	87.0%	4.11 ± 0.79	88.7%
6.	1. Instructions were clear and detailed for easy 2. preparation/performance at each station.	4.06 ± 0.85	83.1%	4.24 ± 0.69	91.9%
7.	The MMI is a fairer way of evaluating applicants than the traditional interview.	4.86 ± 0.82	83.1%	3.85 ± 1.04	72.6%
8.	3. I would prefer to be involved in the process of MMI in Future.	4.12 ± 0.87	81.8%	4.16 ± 1.03	82.3%

Scores: 1 = Strongly Disagree, 2 = Disagree, 3 = Undecided, 4 = Agree, 5 = Strongly Agree

Table-2: Acceptability of MMI (Candidates).

Q.#	Statements	2015 (n = 333) Mean ± Std. Deviation	2015 (n = 333) % Agreement	2016 (n = 627) Mean ± Std. Deviation	2016 (n = 627) % Agreement
1	Instructions regarding MMI were explained clearly on arrival	4.29 ± 1.00	91.3%	1.50 ± 1.02	89.5%
2	Time duration (Five minutes) was enough to assess the attribute to be evaluated.	3.60 ± 1.20	67.9%	4.29 ± 1.31	66.5%
3	MMI stations were diverse and sufficient in number in assessing applicants' behavior	4.13 ± 0.98	86.2%	3.61 ± 0.92	87.6%
4	Instructions were clear and detailed for easy prep/performance at each station	4.02 ± 1.10	80.5%	4.17 ± 0.95	86.3%
5	The day was well organized.	4.21 ± 1.01	86.5%	4.20 ± 0.89	92.2%
6	The MMI allowed me to show my motivation in joining MBBS program at SMDC	4.05 ± 1.03	80.5%	4.33 ± 0.96	83.9%
7	The MMI is a fairer way of evaluating applicants than the traditional interview	4.12 ± 1.07	80.2%	4.23 ± 0.93	82.8%
8	I prefer the MMI over the traditional interview	4.17 ± 1.08	81.1%	4.14 ± 0.97	81.0%
9	The MMI was a pleasant experience	4.26 ± 0.88	89.8%	4.08 ± 0.88	89.8%
10	There was no gender bias in the MMI	4.31 ± 0.96	87.4%	4.28 ± 0.93	89.3%
11	There was no cultural bias in the MMI	4.28 ± 0.91	88.0%	4.37 ± 0.94	87.9%
12	MMI helped to showthe strengths and competitiveness of every candidate	4.21 ± 0.87	85.6%	4.29 ± 0.90	84.8%
13	Having done the MMI, I am more likely to rank the SMDC higher in the MBBS program	4.28 ± 0.84	86.8%	4.13 ± 0.88	85.3%

Scores: 1 = Strongly Disagree, 2 = Disagree, 3 = Undecided, 4 = Agree, 5 = Strongly Agree

Table-3: Comparison of acceptability for same questions assessors and candidates (2015 & 2016).

Questions	2015 Assessors n = 77 Mean Rank	2015 Candidates n = 333 Mean Rank	P-Value*	2016 Assessors n = 62 Mean Rank	2016 Candidates n = 627 Mean Rank	P-Value*
MMI helped to showthe strengths and competitiveness of every candidate	209.73	204.52	0.563	329.43	346.54	0.307
Time duration (Five minutes) was enough to assess the attribute to be evaluated	234.59	198.77	**0.003**	408.06	338.76	**0.001**
4. Instructions were clear and 5. detailed for easy 6. prep/performance at each 7. station	211.32	204.15	0.484	363.35	343.19	0.196
The MMI is a fairer way of evaluating applicants than the traditional interview	211.03	204.22	0.508	312.61	348.20	0.045

*Mann-Whitney U-test

Results of Mann-Whitney U-test showed that there was statistically significant difference (P = 0.003 & P = 0.001) between assessors' and candidates' views for the station being long enough to complete the task for both 2015 and 2016 respectively. Rest of the comparison was insignificant (**Table-3**).

DISCUSSION

This study provides evidence of acceptability of MMI in medical school admission. Data for the cohort of 2015 has already been published with different objectives in terms of sum of ranks.[16] Replicating the results of previous studies, the current study also showed that stake holders (candidates and interviewers) perceive MMI as a fair and reliable tool for assessing non-cognitive and/or higher cognitive behaviours of prospective medical students.[17-20] In general the applicants prefer this format of interview and rank the college higher than other MBBS programs. This is in accordance with the previous studies that claimed the candidate's strong preference for the medical school with this interview format.[21,22] Similarly the two cohorts of applicants recognized that MMI were unbiased and gave an opportunity to show case their strengths which seconds the findings of quantitative as well as qualitative studies.[17,23,24]

Comparison of similar items in both questionnaires (interviewer and interviewee questionnaires), revealed that both stake holders perceive the process as an equal opportunity to demonstrate the attributes being assessed. They both agreed with the fairness of process and rated the clarity of the instructions that were given to candidates before the interview as high. "Time duration (Five minutes) was enough to assess the attribute to be evaluated" was the only statement that showed significant difference of the opinion among the stake holders in both years. Interviewers perceive 5 minutes time as enough for assessment but candidates have contrasting views about it. Careful evaluation of literature also revealed that shorter duration is well perceived by interviewers.[19,22,25] Evidence regarding the acceptability of duration by applicants showed that they were satisfied with the duration of the station, if it is 7 minutes or more.[11] On the other hand they expressed anxiety for shorter duration.[20] Even though the psychometrics showed that lessening the duration would have no effect on reliability because the number of stations can be increased, but this may affect the performance.[25] This justifies our study finding of candidates' dissatisfaction with 5 minutes duration of station.

CONCLUSION

The data in the current study comprised of two cohorts of applicants as well as interviewers that showed the consistency in acceptability of the process. This is the first study that evaluates and reflects the stake holders' acceptability of MMI in the current study's context. It also shares guidelines for MMI development in light of author's personal experience. Further research is needed to identify the optimum duration of the stations to reach the acceptability by applicants. With PMDC prerogative of conducting centralized assessment, this study provides evidence of individual admitting authorities' right to practice assessment based on their own standards. The guidelines shared here will also help others to develop MMI in their admission process as MMI can be used in other health professionals like Nursing, Dentistry, and Pharm D.

LIMITATIONS OF STUDY

Current study presents only the perception of stake holders and no correlation with the psychometric analysis of the process was highlighted. Secondly, the analysis of qualitative results was not correlated to further refine the results in the present study.

CONFLICT OF INTEREST

None to declare.

FINANCIAL DISCLOSURE

None to disclose.

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Author's Contribution

SA: Conception, collection, analysis of data and article drafting.
MSSH: Design, analysis of data, critical revision.
SHS: Collection, analysis of data, article drafting and critical revision.
ALL AUHTORS: Final approval of the version to be published.