Multiple Mini-Interviews (MMI) and Semistructured Interviews for the Selection of Family Medicine Residents: A Comparative Analysis

Marie Andrades, Seema Bhanji, Samreen Kausar, Fouad Majeed, and Sheilla Pinjani

1 Faculty Family Medicine, Aga Khan University, Karachi 3500, Pakistan
2 Consultant Family Medicine, Prince Salman Armed Forces Hospital, Tabuk 71411, Saudi Arabia
3 Faculty Department of Educational Development, Aga Khan University, Karachi 74800, Pakistan

Correspondence should be addressed to Samreen Kausar; samreen.kausar@aku.edu

Received 6 March 2014; Revised 8 May 2014; Accepted 12 May 2014; Published 5 August 2014

Academic Editor: Ravi Shankar

Copyright © 2014 Marie Andrades et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Background. Family Medicine Residency Program at the Aga Khan University has applicants for the residency position in excess of the positions offered resulting in formulation of certain selection criteria. The objective of this study was to compare MMI versus semistructured interviews for assessing noncognitive domains in the selection of residents. The secondary objectives were to determine perceptions of the interviewers and candidates for the acceptability and feasibility of MMI as a selection tool.

Methods. The candidates underwent semistructured interviews along with MMI and identical attributes were tested in both. The attributes tested were safe doctor, communication skills, professionalism, problem solving, team approach, ethical issues, reasons for selecting family medicine, and commitment to the program. Descriptive statistics were calculated and comparison between ratings for MMI and interview was performed by Wilcoxon sign rank test.

Results. Total number of candidates was 14. On comparison between interview and MMI, the scores were not statistically different for all attributes except ethics (mean interview scores: 3.04, mean MMI scores: 2.5, and $P$ value 0.046).

Conclusion. The study showed no difference between MMI and semistructured interviews. However, it needs to be replicated in order to determine the predictive validity and feasibility of MMI over time.

1. Background

Globally residency positions offered are generally limited as compared to the number of candidates applying resulting in certain selection criteria [1]. Hence efforts are made to ensure that selection processes are fair and merit based, with reliable/valid/objective and standardized tools.

Currently several admission strategies have been adopted in residency programs [2]. The applicants’ cognitive (academic) achievements are evaluated by written examinations and aptitude tests. The noncognitive domains like motivation and attributes of professionalism are assessed through interviews [1, 3]. However challenges to reliability and validity of interviews remain due to lack of training, structuring, and variation in scoring [4, 5].

The MMI is an internationally validated tool which comprises multiple station interviews with one or two interviewers rating candidates’ responses. MMI has demonstrated evidence for generalizability and validity in relation to future clinical and licensing examination performance as compared to traditional interview methods. It has been used to measure professionalism for international graduates in residency selection at University of Calgary [6, 7]. In addition MMI has established acceptability with stakeholder groups at the admission level for both undergraduates and postgraduates [8, 9].

Family Medicine Residency Program at Aga Khan University (AKU) has the distinction of being the first residency-training program in family medicine in Pakistan [10]. Since inception the Residency Selection Committee (RSC) has used
a semistructured interview format. An internal review of
the residency program recommended incorporating a tool to
better assess the noncognitive domains which may improve
the selection process particularly as issues of professionalism
were arising among the residents.

The objective of this study was to compare MMI ver-
sus semistructured interviews for assessing noncognitive
domains in the selection of Family Medicine residents
(Table 1).

The secondary objectives were to determine perceptions
of the interviewers and candidates for the acceptability and
feasibility of MMI as a selection tool.

2. Methods

Aga Khan University has a two tiered process for selection
in which the cognitive domain is assessed through a written
test. Those candidates shortlisted from the written test are
then assessed for noncognitive attributes by an interview
process. An average of 40–50 residency applicants competing
for six positions sit for the test and about 15–18 applicants are
shortlisted for the semistructured interviews.

The interview process consists of two separate panels
of interviewers comprising three Family Medicine Faculty
members in each panel. Each candidate is being interviewed
by both the panels. The interview is semistructured (the ques-
tions are identical case scenarios for both panels; however
there is no uniform accepted answer option). The attributes
tested are safe doctor, communication skills, professionalism,
problem solving, team approach, ethical issues, reasons for
selecting Family Medicine, and commitment to the program.
Each panel interview is of 20-minute duration in which a
seven-point Likert scale is used by each faculty for scoring
(see Table 3).

In 2010 we had a total of 49 candidate applications. Forty-
seven appeared for the test and the first 16 highest scorers
were shortlisted for the semistructured interview and MMI.
As this MMI was a pilot selection method, the candidates
were informed that they would be selected based on the
interview scores and not MMI. Approval for the study was
secured before ) . Interview swere expected to rate on a Like rt rs c ale
measured using a seven-point Likert scale. A total of 70% marks in their final MBBS examination.

3. Results

Demographic background: a total of 16 candidates (12 female)
were in the interviews and a total of 14 sat in the MMI (11 female). Comparison was conducted for the 14 candidates
who sat in both the tests. Eight out of 14 candidates had
graduated within the last three years. Seven candidates have
secured >70% marks in their final MBBS examination.

Interviewers’ Responses to Post-MMI Survey. A total of eight
interviewers were surveyed. Majority (87%) of the interview-
ers believed that they were able to get an accurate portrayal
of the candidates. Fifty percent (4 out of 8) interviewers were
unsure of the feasibility of conducting an MMI compared to
the interviews. All but one of the interviewers thought
that interviews can be replaced by MMI. The open narrative
comments by faculty members included need for sound proof
venue for the MMI stations and a post hoc analysis of the
process.

4. Discussion

This study demonstrates a statistical difference
between MMI and semistructured interviews. A plausible
explanation could be the type of questions in semistructured
interview and examiner training could be one reason.
Literature also supports the reliability of semistructured
interviews [13]. Ethics was the only domain where the scores
for MMI were less than that of semistructured interviews.
Table 1: Comparison of ratings of semistructured interviews and MMI stations (n = 14).

<table>
<thead>
<tr>
<th>Serial number</th>
<th>Attribute</th>
<th>Mean score semistructured interview</th>
<th>Mean score MMI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Safe doctor</td>
<td>3.07</td>
<td>3.00</td>
<td>0.78</td>
</tr>
<tr>
<td>2</td>
<td>Communication skills</td>
<td>3.07</td>
<td>3.36</td>
<td>0.41</td>
</tr>
<tr>
<td>3</td>
<td>Problem solving</td>
<td>3.01</td>
<td>2.71</td>
<td>0.21</td>
</tr>
<tr>
<td>4</td>
<td>Professionalism</td>
<td>3.11</td>
<td>3.14</td>
<td>0.75</td>
</tr>
<tr>
<td>5</td>
<td>Ethics</td>
<td>3.04</td>
<td>2.5</td>
<td>0.046</td>
</tr>
<tr>
<td>6</td>
<td>Team member</td>
<td>3.02</td>
<td>2.93</td>
<td>0.84</td>
</tr>
<tr>
<td>7</td>
<td>Commitment to completing residency</td>
<td>2.75</td>
<td>3.07</td>
<td>0.21</td>
</tr>
<tr>
<td>8</td>
<td>Reasons for doing Family Medicine</td>
<td>2.64</td>
<td>2.64</td>
<td>0.92</td>
</tr>
</tbody>
</table>

Table 2: Frequencies of candidate's feedback response of MMI.

<table>
<thead>
<tr>
<th>Serial number</th>
<th>Attribute</th>
<th>None</th>
<th>Somewhat</th>
<th>A lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ability to portray themselves</td>
<td>1</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>Anxiety during the selection</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>process</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Specialized knowledge needed for</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>the stations</td>
<td>1</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Reliability of selection method</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Difficulty of exam</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Adequate time allocation</td>
<td>1</td>
<td>4</td>
<td>8</td>
</tr>
</tbody>
</table>

Limitations of this study include a small sample size. In addition we had eight stations rather than the minimum of ten which was not possible because of limited availability of resources.

5. Conclusion

The purpose of conducting MMI is to select candidates who have the most suited desirable attributes for Family Medicine Residency Program. Based on this study there was no difference between semistructured interviews and MMI. Hence it is expected for the program to continue with semistructured interviews as MMI is more resource intensive. However, this study needs to be done longitudinally over time in order to have a better idea of its reliability and predictive validity.

Appendices

A.

See Table 3.

B. Sample Multiple Mini-Interview (MMI)

Station: Testing Professionalism

Some time ago, there was breaking news of a professor being sacked/fired because of a death of a patient after a pair of scissors was left inside the peritoneum by a senior registrar during laparotomy, while a resident and nurse technician were assisting.

(1) Who do you think was responsible?
(2) Should it be communicated to other team members and hospital staff?
(3) What would be your response, had you been assisting the senior registrar and left the scissors inside?
(4) Having learned from this situation, what would you do in the future?
(5) In your opinion who should talk to the patient's family?

Attributes are professionalism: ethics/confidentiality, teamwork, and reflection.
### Table 3: Candidate interview evaluation form.

<table>
<thead>
<tr>
<th>Candidatename</th>
<th>Date</th>
<th>Serial number</th>
<th>Attributes</th>
<th>Poor</th>
<th>Adequate</th>
<th>Outstanding</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>Safe doctor: knows his own limits, readily consults senior, cautious in taking risky decisions, and so forth.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Communication skills: able to communicate clearly with colleagues, patients, and families</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>Problem solving skills: logical and systematic in approach to clinical problems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>Professional attitude: empathic and compassionate towards patients and families: courteous towards all colleagues</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td>Ethical: sensitive towards confidentiality, patient rights, and moral values</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>Team member/interpersonal relationships: efficient team member and utilizes input from other colleague</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td>Reason for choosing Family Medicine:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>Commitment: commitment to completing residency and the profession</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
<td>General comments:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 4

<table>
<thead>
<tr>
<th>Level</th>
<th>Points</th>
<th>Underlying scoring criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outstanding</td>
<td>7</td>
<td>(i) Identifies it as a team problem and professor as team-leader</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(ii) Should be discussed within the team but maintains confidentiality by not discussing it outside the team</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(iii) Would have owned up to the professor or senior registrar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(iv) Reflects and learns from the situation by modifying approach (e.g., changing personal practice like counting instruments after surgery and educating other health care team members or teaching session on common errors in surgical practice)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(v) The senior registrar or professor should communicate to the patient’s family</td>
</tr>
<tr>
<td>Excellent</td>
<td>6</td>
<td>(i) Identifies it as a team problem and professor as team-leader</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(ii) Should be discussed within the team but maintains confidentiality by not discussing it outside the team</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(iii) Would have owned up to the professor or senior registrar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(iv) Reflects on the situation but does not identify the learning needs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(v) The senior registrar or professor should communicate to the patient’s family</td>
</tr>
<tr>
<td>Good</td>
<td>5</td>
<td>(i) Identifies it as a team problem and professor as team-leader</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(ii) Should be discussed within the team but maintains confidentiality by not discussing it outside the team</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(iii) Would have owned up to the professor or senior registrar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(iv) Fails to reflect on the situation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(v) The senior registrar or professor should communicate to the patient’s family</td>
</tr>
<tr>
<td>Adequate</td>
<td>4</td>
<td>(i) Identifies it as a team problem and professor as team-leader</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(ii) Does not discuss within the team but maintains confidentiality by not discussing it outside the team</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(iii) Would have owned up to the professor or senior registrar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(iv) Reflects on the situation but does not identify the learning needs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(v) The senior registrar or Professor should communicate to the patient’s family</td>
</tr>
<tr>
<td>Marginal</td>
<td>3</td>
<td>(i) Does not identifies it as a team problem and professor as team-leader</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(ii) Does not discuss within the team but maintains confidentiality by not discussing it outside the team</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(iii) Would not have owned up to the professor or senior registrar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(iv) Does not reflect on the situation but does not identify the learning needs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(v) The senior registrar or professor should communicate to the patient’s family</td>
</tr>
<tr>
<td>Inadequate</td>
<td>2</td>
<td>Identifies only one or two criteria</td>
</tr>
<tr>
<td>Poor</td>
<td>1</td>
<td>Identifies no criteria</td>
</tr>
</tbody>
</table>
Most important attribute in this case is professionalism.

Instructions for Interviewers. This is a station where you will have to explore the attributes of professionalism, from the candidate. Let the candidate speak first and go through the scenario.

Key

Positives

(i) Identifies it as a team problem and professor as the team-leader
(ii) Should be discussed within the team but maintains confidentiality by not discussing it outside the team.
(iii) Would have owned up to the professor or senior registrar
(iv) Reflects and learns from the situation by modifying their approach (e.g., changing personal practice like counting instruments after surgery and educating other health care team members or teaching session on common errors in surgical practice),
(v) Maybe the senior registrar or the professor should communicate to the patient’s family.

Negatives

(i) Discusses the situation with the family him/her self
(ii) Blames one or everyone responsible for the incident
(iii) Does not want to communicate with the team
(iv) Has insufficient insight of the implications of the problem

Marking Key (see Table 4)

Expectations. A candidate should have situation awareness (gravity of the situation), understanding of team responsibility, ability to reflect, propose solutions as change in practice (evidence of initiative), and maintains confidentiality.

Indicators for this domain include

(i) understanding the needs of communication within team and family
(ii) understanding of responsibility as a team member
(iii) reflections on implications of critical incident on self and change in practice
(iv) implications of maintaining confidentiality and its breach.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

Acknowledgment

The authors would like to acknowledge the Family Medicine Faculty for sparing their time for this pilot and the candidates for agreeing to participate in this study.

References

[10] Aga Khan University Post Graduate Medical Education Department, Residency Program in Family Medicine, 2010.


Submit your manuscripts at http://www.hindawi.com