

BEME Spotlight 45

Utility of Selection Methods for Specialist Medical Training: A BEME (Best Evidence Medical Education) Systematic Review

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Review website

<https://bemecollaboration.org/Published+Reviews/BEME+Guide+No+45/>

Keywords

Selection, methods, assessment, specialist/postgraduate, medical training, utility index, prediction

Headline conclusions

- A laissez-faire approach to selection frameworks wherein the system is defined by locally derived selection criteria heavily weighed on academic parameters (such as in the US) seems to be giving way to the systematic introduction and evidencing of competency-based training approaches to selection in some settings such as the UK that includes non-cognitive characteristics.
- While much has been gained in terms of evidencing the utility of selection tools, assumptions around the theoretical and conceptual underpinnings of selection systems are yet to be investigated.
- In terms of selection tools, we found favorable evidence on the reliability and validity of multiple mini-interviews (MMI), situational judgement tests (SJT) and clinical problem solving tests (CPST). However, the bulk of evidence on the SJT and CPST was mostly limited to the principal development centres in the UK. The evidence around the robustness of curriculum vitae, letters of recommendation, and personal statements seems equivocal and limited.
- The bulk of evidence on the predictors of subsequent performance was limited to academic criteria such as scores in standardised examinations. The evidence around non-academic criteria including emotional intelligence and interpersonal characteristics was inadequate to make an informed judgement. There was a paucity of long term evaluations assessing the predictive validity of these tools.

Background and context

Selection into specialty training is a high-stakes and resource-intensive process primarily aimed at predicting the likelihood of an applicant successfully completing training, and becoming a doctor with appropriate expert knowledge, clinical skills, and professional behaviours. Some postgraduate medical education settings are undergoing a paradigm shift towards competency-based approaches to the design and implementation of training curricula (Frank et al., 2010). In parallel, some postgraduate medical education settings are developing competency-based approaches to selection that use specifically designed selection formats. While there is a substantial literature focussing on selection into medical schools, and there are individual studies in postgraduate settings, there seems to be paucity of evidence concerning designing selection systems as well as the utility of selection tools in postgraduate training environments.

Review objectives

The review addressed three questions:

- What are the underlying frameworks, principles, and methods of selection into postgraduate medical specialty training?

- How effective are the existing methods and criteria in terms of validity, reliability, feasibility, acceptability, cost effectiveness, and other indicators of a good assessment?
- What are the predictors of the selected trainees' success in subsequent performance?

Review methodology

Search Strategy: Prior to conducting the full systematic review, a pilot was conducted to test the proposed review protocol and to refine the search strategy. Core bibliographic databases including PubMed; Ovid Medline; Embase, CINAHL; ERIC, and PsycINFO were searched and a total of 2640 abstracts were retrieved. After removing duplicates and screening against the inclusion criteria, a total of 201 papers were retrieved; of these 116 were included and fully coded independently by two reviewers.

Inclusion and Exclusion Criteria:

The following four questions were used to determine compliance with the study criteria:

1. Does the study focus on selection into work based postgraduate medical specialty training? (Work based postgraduate specialty training implies all the clinical disciplines in postgraduate medical education which are usually undertaken in work based or clinical/hospital/community setting).
2. Is the year of publication from Jan 1 2000 to May 31 2016 and language is English?
3. Are the subjects or target population of the study involved in selection to specialty training (such as trainees, program directors, selectors)?
4. Is the study empirical i.e. does it provide some evidence of verifiable data?

Data Extraction: The review members were divided into five pairs. Relevant papers were divided equally among the five pairs and each pair reviewed the full-text papers using the agreed BEME coding sheet. Each member of the pair initially completed reviews independently, and a third reviewer was approached in case of discordance. Data extracted included: details of citation, characteristics of study including location, number of participants, area of specialty, methodology, underlying selection frameworks, predictors of success, utility of selection methods, quality, relevance, and strength of study, and overall impression of the article.

Data Synthesis: A total of 89 articles were rated as high quality and the rest as low evidence. Using narrative review, the data of high quality articles was synthesised under the three review objectives as stated before.

Implications for practice

Synthesised evidence from this review reports not only psychometric evidence on strengths and limitations of various selection methods and tools, but it also illuminates a research gap in understanding the theoretical underpinnings of selection systems. We found some linkage in certain selection systems with the tenets of competency-based training. So far, research in selection still seems to be largely based on the reductionist view of the selection process, which focuses considerably on past academic attainment, especially in terms of predictive value. We also highlighted a number of common methodological issues in predictive validity research.

Given the complex, emergent, and dynamic environments in which the specialist training environments operate, our review highlights the need to develop holistic, equitable and technology enabled selection frameworks suited for complex environments. Apart from utilising the evidence on psychometric robustness of selection methods, the broader literature from various other disciplines such as organisational psychology, organisational management, sociology, and social psychology needs to be taken into perspective when designing more standardised, centralised and holistic selection systems.

In terms of further research, we advocate the need for selection based studies to move beyond test-driven methodologies towards exploring critical issues around the impact on applicants, training systems, and the wider community in which the future specialist will serve.

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