Reviewer's report

Title: Predictive validity of a new integrated selection process for medical school admission

Version: 1 Date: 14 January 2014

Reviewer: Ian Puddey

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1. Is the question posed by the authors well defined?
This paper evaluates the predictive validity of an integrated selection process for medical students utilised at the University of NSW. The process comprises a cognitive skills test – the UMAT, a structured interview and prior academic achievement and replaced previous selection via prior academic achievement alone. A series of studies of varying quality and size have similarly evaluated the addition of UMAT and/or interview at other Australian and New Zealand universities but have not previously considered the potential confounding influence of socio-demographic factors. This is a unique contribution of this manuscript. Potential socio-demographic confounders clearly need consideration given the conclusions of 2 recently published articles in BMC Medical Education (1-2).

2. Are the methods appropriate and well described?
Overall the methods are appropriate and well described. The authors indicate that the broadened selection process was introduced to filter out students with identical prior academic achievement but do not indicate whether threshold levels for entry were applied for each of the selection criteria. Were the approximate 25% of students admitted through the rural entry scheme selected utilising identical criteria to the rest of the cohort or with lower thresholds and lower overall scores? Some clarification on this will reassure the reader that this has not confounded the reported outcomes.

3. Are the data sound?
The data are sound and have been carefully analysed. However, I am troubled by the uncritical use of data from the 2002 and 2003 cohorts to imply that the integrated selection process introduced from 2003 is a better predictor of academic outcomes than the TER alone. No socio-demographic analysis comparing the 2002 and 2003 cohorts has been done and it is very likely that there will be substantial differences as the authors themselves note on page 4 (ref 18). Such potential differences (eg more students from an East Asian background or more males or fewer students of rural origin in the 2002 cohort) may have dictated the change in profile of TER as a predictor and a comparable regression analysis with correction for these potential confounders to that undertaken for the 2003 and 2004 cohorts is indicated.

4. Does the manuscript adhere to the relevant standards for reporting and data
deposition?
Yes.

5. Are the discussion and conclusions well balanced and adequately supported by the data?

The authors reasonably conclude, based on their data, that the assessment of communications skills by interview together with prior academic achievement, are valuable components of an integrated selection process. However, the predictive validity of the UMAT for undergraduate medical school performance has been consistently disappointing in a number of studies in Australia and New Zealand. The authors acknowledge this and have replicated this finding in the current study. The conclusions in the abstract remain ambiguous in this regard, however, and could be read as continuing to support its inclusion in their integrated selection process.

Furthermore, without the limited analysis of the 2002 and 2003 cohort that is presented in Table 4, it would be very difficult to support the conclusion that the integrated selection process is superior to the TER alone because the correlation of the final program WAM with the TER ($r=0.448$) is considerably stronger than that with the integrated admission score ($r=0.151$) (Table 3).

6. Are limitations of the work clearly stated?

A paragraph on the limitations of the study (those listed above as well as range restriction, unaccounted confounders, relatively small numbers etc) in the discussion should be considered.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?

Yes. Other recently published work on the predictive validity of the UMAT might also be considered for inclusion and discussion (5-6).

8. Do the title and abstract accurately convey what has been found?

Yes.

9. Is the writing acceptable?

Yes.

Minor Essential Revisions

On page 3 it is stated “the ability of prior academic achievement to predict performance in the later years of medicine drops to insignificant levels”. This is not supported by our own work (ref 5 in the manuscript) or that quoted by the authors (ref 10). Most studies find that prior academic achievement remains the best predictor of subsequent academic achievement in medical school although its relative predictive strength may diminish as the course progresses.

On page 15 it is stated “One interpretation of this finding is that the university environment provides students with uniform learning opportunities that rescind any educational advantage that may come from secondary school attended. However, there is no evidence that the authors are aware of to support this
interpretation.” In fact the phenomenon of a student’s performance being enhanced by immersion in an independent school but with subsequent under-performance relative to students from government schools on studying at university is well described in Australian settings (3-4).

On page 15 it is stated that “students who were born in European/European-derived countries outperformed students born in East Asian and other countries in overall program and clinical skills outcomes.” For students of East Asian origin this is supported by the data presented in Table 5, but not for those from Other countries.

P values designated as 0.000 in Tables 3 and 5 need to either be defined or re-written as <0.001.

Discretionary Revisions
The authors refer to unreferenced anecdotal evidence in relation to justification of the use of the interview in medical student selection, both in the background (P4) and the final paragraph of the discussion (P16). I think this weakens rather than strengthens the arguments put forward and would suggest their exclusion.


Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests.