Reviewer's report

Title: What motivates medical students to select medical studies: A systematic literature review

Version: 0 Date: 25 Jul 2017

Reviewer: Bryan Burford

Reviewer's report:

This a timely paper on an area of global interest. I have raised some points around the clarity of how the search was conducted and how results were derived.

While overall well written, there are one or two minor typos/grammatical errors and I would recommend the final manuscript is proofread with a particular eye on grammar.

Background

1. The structure of the background section could be clearer and more logical, and could also be a bit longer with more detail of some of the literature such that the need for a new systematic review is clearly apparent.

2. The second paragraph introducing motivation as a theoretical framework for the decision would be better placed towards the end of the Background, probably with a subheading. A bit more detail on candidate theories would be appropriate as this is something you intend to return to later in the paper.

3. While restricting your review to the last 10 years is an appropriate enough decision, it would be helpful if you could suggest what may have changed, for example since the Brissette and Howes (2010) review. A fuller summary an enumeration of those reviews which have been carried out would make this point clearer.

4. The third paragraph beginning 'The choice of medical study' needs some work. You identify some existing reviews after you have introduced some possibly motivating factors. A more intuitive structure would be to summarise the findings of those earlier reviews first, and then the factors emerging from them.
5. A paragraph break before 'Many studies…' would separate what seems to be a point of policy from the more individual focus of the factors referred to in the earlier part of the paragraph.

6. The statements about 'sustainable development goals' and the 'WHO's six building blocks' seem like they should be referenced.

Method

The methods are mostly clear and well-described.

7. The presentation of the search terms seems a bit cumbersome, and I wonder if would be simpler to describe the search strategy with OR as well as AND statements. I appreciate different databases use different syntax for Boolean combination, but I think you basically have:

(Motivat*) AND (select* OR choice OR choose) AND (medical school* OR medical student* OR intern*)

I'm not sure whether the wildcarding I have included would have substantially changed hits.

8. Could you clarify why you included 'interns' in your search terms?

9. Could you spell out what the difference between the 'initial' and 'refined' searches referred to on p6 was? I would expect the reported search terms to be those which arrived at the final set considered in the review, but this isn't clear.

10. Was any measure of the overall quality of the papers recorded?
Results

11. The summary of the papers found is clear, but I wonder how the systematic reviews were considered in the thematic analysis.

12. Within the cross-sectional studies some more detail of the study methodologies/methods is needed - are they prospective, retrospective, surveys, qualitative, quantitative etc.

13. It is also not clear on what basis the coding was done - you appear to be identifying effects which were reported, but it would be helpful to have a summary of effects which were considered, and which were significant (where statistical analysis was reported). It's not clear how the elements you have coded were derived from the papers. This would be stronger if instead of, or as well as the 'factors' column in table 4, there was a 'measures' column giving the precise indicator(s) considered in each study.

14. The details of the Goel et al study referred to on p8 would be better placed in the background and methods section.

15. On the headings derived from that study I would query the 'scientific' domain, both on semantics and the elements in that group. While the aspects relating to technology and the subject of medicine may be classed as scientific, those elements related to aspirations around work (opportunities to travel and research opportunities) do not seem to be conceptually similar. 'Loss of a loved one' seems to be different again, but potentially closer to the 'humanitarian' domain. It may be that the interpretation of these issues to indicate membership of a domain needs further description.

16. Your table 5 actually seems to put 'loss of a loved one' into the humanitarian group, but the scientific domain still seems heterogeneous.

17. Although figure 3 seems striking, I do worry you may have over-interpreted on the basis of low frequencies in the lower and middle income groups. A Fishers exact test on the frequencies shown in fig 3 is non-significant (p=0.125). That's not necessarily a problem for the paper overall, but as you are presenting frequencies, I think you should acknowledge the apparent association is not significant. (If you collapse the upper and
lower middle income frequencies, p reduces to 0.568, so I have little doubt there is an association of some sort there).

Discussion

18. The discussion is interesting and clear, and the link between income and Maslow's hierarchy of needs is an interesting one. I think the relative importance of intrinsic and extrinsic factors overall could be considered in more detail, and other theoretical approaches to medical student motivation (or indeed career choice) at least acknowledged - that would help place findings in a wider context.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

Not relevant to this manuscript

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published
Declaration of competing interests
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal