Reviewer's report

Title: Rural outreach by specialist doctors in Australia: a national cross-sectional study of supply and distribution

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Reviewer: Raymond Pong

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Is the question posed by the authors new and well defined?

The research issues addressed in the manuscript are well defined. The major purpose is to describe the extent of rural and remote outreach by specialists in Australia and the characteristics of specialists who provide outreach services.

According to the authors, no previous research has examined such issues at the national level. If this is true, then the issues studied by the authors are new.

Are the methods appropriate and well described, and are sufficient details provided to replicate the work?

The data analysis presented is appropriate. But since I do not know what other data are available from the survey, I cannot say if the analysis could have been done differently or in a more sophisticated manner.

I find the description of the survey and the data that the survey generated too sketchy. I realize that the survey was not conducted by the authors who based their analysis on secondary data from the “Medicine in Australia: Balancing Employment and Life” study. Nonetheless, I believe the readers deserve to know more about the survey and the data. For instance, what was the sampling design? I also find the description somewhat confusing: It says that it was a national database of ALL Australian doctors (1st paragraph in “Methods” section), but the very next sentence says 4,596 specialists represented 22% of the specialist population. Was it a sample survey or a census of all Australian physicians? How was the survey conducted? Was it a mail survey or an online survey? What was the response rate? All such information is missing. Theoretically, readers could go to the survey website to find out more if they want to, but readers should not have to do further digging and searching for such basic and essential information.

Since HRH has an international readership, some non-Australian readers may not be familiar with such things as the Australian Standard Geographic Classification system. Thus, stating that rural is indicated “by an index > 1” and remote is indicated “by an index 4-5” (2nd paragraph in “Methods” section) is not very helpful. The authors may wish to consider providing a short but systematic explanation for such terms as “inner regional”, “outer regional”, “remote,” etc., possibly in tabular form and as an appendix.
Are the data sound and well controlled?

Generally speaking, I have no problem with the data analysis as presented in the manuscript. The statistical analysis appears sound.

However, I do have some other concerns. The study is supposed to “describe the EXTENT of rural outreach by specialist doctors in Australia” (1st paragraph in “Abstract” and last paragraph in “Background” section). But I think the objective of the study was overstated. The study tells us how many (or what proportion of) specialists provided outreach services. But it does NOT tell us how much outreach work they did. For instance, did the specialists do a couple of days of outreach each year or did they engage in outreach work for a couple of weeks or a couple of months each year? How many patients did specialists typically see each day when they did outreach? Unless we know both (i.e., the number of specialists doing outreach and the amount of outreach work they typically did), we really do not have a clear idea of “the extent of rural outreach by specialist doctors.” It is possible that the database did not have such information for analysis. If such is the case, it should be stated clearly and possibly identified as one of the limitations of the study.

In the 3rd paragraph in the “Results” section, I am not clear what the percentages mean. For instance, it is stated that the “largest specialist types with the largest numbers of outreach providers were psychiatrists (9% of total), pediatricians (7%)....” Are the 9% and 7% refer to the fact that of all specialists doing outreach, 9% were psychiatrists and 7% were pediatricians? If this interpretation is correct, the findings are hardly surprising since those are the bigger specialties (in the sense that there are many more psychiatrists and pediatricians than, say, neurosurgeons or medical geneticists). Actually, psychiatrists were less likely to provide outreach services (as noted in the 12th paragraph in “Discussion” section). A more meaningful analysis is to find out what proportion of all psychiatrists and what proportion of all pediatricians in Australia did rural outreach.

Lastly, not knowing how the survey was conducted and how well it was done and not knowing what data were available in the database, it is not possible to know whether the data used in the study are sound or whether the analysis should have been done differently.

Does the manuscript adhere to the relevant standards for reporting and data disposition?

I believe the manuscript adheres to relevant standards for reporting and data disposition.

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

In the second paragraph in the “Discussion” section (as well as in “Abstract”), it
was pointed out that outreach participation was more common among male specialists. While the results are statistically significant, the fact that nearly 80% of specialists doing outreach were male is hardly surprising since 77% of all specialists in Australia were male. Is such a finding important enough to be highlighted?

Since most of the readers of this article are likely to be international readers (i.e., non-Australians), I think a more systematic presentation (possibly in the “Background” section) of the physician workforce distribution and Australian government policies in relation to outreach would be very helpful as it will provide a useful context for understanding the analysis and findings. Some such information is already in the manuscript, but it tends to be scattered all over the place in the “Background” and “Discussion” sections. Some reorganization of the presentation could do the trick.

On the positive side, one of the strengths of the study is the differentiation between outreach services in rural areas vs. outreach activities in remote areas. The study has successfully shown that there were interesting differences between the two.

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

The title accurately conveys what the study has found. But, by saying that the aim of the study is to “describe the extent of rural outreach by specialist doctors”, the abstract presents an overstatement. As I have pointed out earlier, since the study only tells us the numbers or proportions of specialists providing rural outreach services. Not knowing how much outreach work they actually did, we really do not know the extent of rural outreach activities that took place in Australia.

Is the writing acceptable?

The writing is acceptable. But there are a few minor typos or grammatical errors that need to be cleaned up. Examples: “...but no single analyses (analysis???) has observed....” (in 4th paragraph in “Background”section); “Rural background was defined as the number of childhood years resident (residing???) in a rural area...” (in 6th paragraph in “Methods” section).

All above comments/suggestions represent minor essential revisions.

I recommend acceptance of the manuscript for publication after minor essential revisions.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.
Declaration of competing interests:

I declare that I have no competing interests.