Reviewer's report

Title: Perceptions of nephrology among medical students and internal medicine residents: a national survey among institutions with nephrology exposure

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Reviewer: John D. Mahan

Reviewer's report:

This manuscript presents results of a detailed survey of US allopathic medical student and internal medicine residents at academic medical centers about their interest in nephrology as a field, and factors influential in their specialty choice. The items concentrate on factors influencing those who are interested in nephrology training and those who are not interested in nephrology training. The results echo those seen in other surveys of students and trainees - interest in subject, work-life balance, mentors and potential reimbursement/difficulty in finding a position are major issues in career decision. The 'burning platform', i.e., the growing numbers of nephrology fellow spots not filled in the NRMP Match is appropriately highlighted.

In particular the authors' framing of the significance of these findings and potential responses that can be pursued by nephrologists, nephrology faculty and institutions are valuable contributions to this important issue.

There are several concerns about the methods and presentation of the data that should be addressed to improve this manuscript.

1. Why did the authors choose to include only "medical schools associated with academic internal medicine training programs"? This excluded a large number of medical students and likely residents who might have been interested in nephrology. What criteria was used to make these selections? This should at least be detailed in the methods. The poor response rate limits the presumed generalizability of the results. Is there any information on the respondents that could favor this being a relatively representative sample, e.g., number of institutions or states represented among the responses (if not directly surveyed, could this be determined by location of IP addresses?).

2. In several sections the medical student and resident results are combined. These are such very different groups. The data should be presented as sub-group defined in all instances (e.g., in abstract), and where useful, comparisons and contrasts highlighted.

3. How were the questions developed? This is such an important detail in understanding the methodology - the How many individuals were involved in the focus groups? How was the generalizability of the focus groups favored? Were any other investigators involved in using this primary data to design questions? Were the questions piloted before the survey launched?
4. Several issues could have been addressed but apparently were not. Why was gender and visa status not surveyed/reported? These items may very well have influenced the responses. Why was the presence of a nephrology fellowship program at the students' and residents training site not surveyed/reported?

5. How were the themes identified? The bag of words model is indicated but is not explained for the reader or an appropriate reference is not indicated. This should be better detailed. How many investigators were involved in this important process?

6. There seems to be opportunities for richer data analysis. The question of the relatively insufficient financial compensation for the perceived workload and work difficulty is frequently posited as a negative incentive for nephrology as a career choice.

The authors could look at those residents who state financial compensation is very important in both the group who choose and the group that foregoes nephrology to determine if there are differences in impact of other factors (to define if the 'phenotypes' are similar or different in regards this question).

Few minor concerns:

7. In interest in the subject matter - why is the recommendation for interactive web-based games and TBLs only stated as 'may need to be utilized' rather than stated more positively?

8. In mentorship - what does concept 'streamline their mentoring skills' mean?

9. In job opportunities - are the 2016 data being compared to 2017 data? Need to make this clear.

As stated above, the organization of the discussion and table of potential opportunities to improve attractiveness of nephrology as a training discipline are very well done. Tables, and charts are appropriate
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.

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
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