Author's response to reviews

Title: National Survey of UK Medical Students on the Perception of Neurology

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Author's response to reviews: see over
Response to reviewer comments

Dear Prof. Ulep,

We thank the reviewers for their very helpful and constructive comments. We appreciate the opportunity to resubmit this paper to BMC Medical Education and have tried to address all the suggested comments. Please find our responses to these below (and highlighted in red in the main manuscript). Please don't hesitate to contact us if you have any further questions.

Thank you very much for your consideration of our manuscript.

We look forward to hearing from you,

Best wishes,
Julia Pakpoor
(on behalf of all co-authors)

Reviewer: 1

1. the response rate is poor-7%.

We would like to highlight that whereas the response rate may be perceived as low relative to the number of medical students in the UK, it is inherently difficult to obtain a high response rate for this kind of national survey. We are the largest survey investigating the perception of neurology approximately by a factor of 10, and have also achieved a higher response rate than other national surveys studying the perception of a specialty among medical students (e.g. geratology - http://ageing.oxfordjournals.org/content/40/3/405.long).

2. it would have been nice if the study added the usefulness of ICT on learning neurology and a guide to neurology demonstration as answer to some of the recurring questions in this study and earlier ones, since the study was carried in UK?

We have added the following paragraph to our discussion section: “Resources through which to teach and enable an understanding of neuroanatomy may be scarce and likely to be helped by the use of online resources. Similarly, the use of available online videos and demonstrations are likely to aid teaching of the neurological examination. An American study investigating alternative methods of teaching neurology found that 6 years following the implementation of an e-textbook student satisfaction had risen and it was identified to be an effective tool to aid the teaching of neurology [11].”

Further, please see the section in the discussion where we discuss the use of a Massive Open Online Course (MOOC): “The widespread scale of neurophobia warrants a national initiative and we propose the establishment of a massive open online course (MOOC) for large-scale participation aimed at teaching functional neuroanatomy around the neurological examination.”

Reviewer: 2

Major compulsory revision

1. What are the evidences of validity for the questionnaire? Since it is a new instrument (questionnaire) a detailed description of evidences for validity is essential to support inferences made from the answers to the questionnaire.
We have highlighted the areas of the manuscript where we describe our measures to try to ensure validity. Notably, we took the following measures:

1. Individuals across four UK universities and at varying stages of training (medical students, neurology trainees, neurologists and neuroscience researchers) were involved in the development of the original questionnaire.
2. The survey was piloted with 10 medical students not previously involved in its design for comments on its suitability and clarity.
3. Subsequently, the survey was also sent to the Association of British Neurologists for review, which lead to some further minor revisions.
4. In looking at the results, incomplete responses occurred for some questions; however, a particular pattern of non-response was not evident.
5. The survey was set to allow only one response per computer.

Further, we have now also added the following to the manuscript methods:
“The studied specialties and the areas explored were selected to ensure consistency with previous smaller surveys investigating the perception of neurology [2].”

2. The authors need to highlight what “new” is being contributed by this study to the field?

- Our study is the largest, and the first national study, to investigate perceptions of neurology by medical students. Our study therefore demonstrates a general perception of neurology across many UK medical schools and is not limited to the inherent bias and course-specific perception which may be found when conducting a small survey in a single medical school. Hence, “neurophobia” is a national issue not restricted to a specific medical school.
- We identify a number of factors suggested by the survey to underlie the negative perception of neurology, notably neuroanatomy, and a lack of integration between preclinical and clinical teaching.
- Small investigations into the perception of neurology among medical students have now been conducted across a period of a decade, and “neurophobia” was noted as early as 1994. As the latest study conducted on this issue, we also highlight that despite interventions by bodies involved in neurological education, the perception of neurology over more than a decade has remained largely unchanged. We have now added a sentence to this effect in the discussion section of our manuscript: “Further, our findings demonstrate that the perception of neurology across more than a decade has remained unchanged, in sharp contrast to the rapidly changing demands of neurological care.”

3. Conclusion is to be drawn from the findings of the study. There are new things in the conclusion which are not part of the study.

- Our discussion previously stated that “Students ranked neurology higher than rheumatology, endocrinology and geriatrics as a prospective career.”. We have now changed this by adding the following to the results section “Regarding the possibility of a career in neurology, students ranked neurology higher than rheumatology, endocrinology and geriatrics as a prospective career.” and leaving in the discussion that “the perceived level of difficulty of neurology is not reflected by the interest in the subject”. Of note, this result is also shown in figure 1 of results.

Further, in our conclusion section we have changed the first paragraph to focus on the findings of the study. We have also moved the following paragraph from the conclusion to the discussion:
“Medical schools should further ensure that they assess the perception of neurology among their students, collect feedback and subsequently assess the effectiveness of any interventions over time. The widespread scale of neurophobia warrants a national initiative and we propose the establishment of a massive open online course (MOOC) for large-scale participation aimed at teaching functional neuroanatomy around the neurological examination.”
4. What are the limitations of the study?

- Please find these highlighted in red in the discussion section of the manuscript. Notably, the limitations of this study include the fact that we cannot exclude the possibility of institutional bias (as response rates were not equal across institutions), responder bias (as despite being the largest survey, only 7% of medical students responded) and acquiescence bias (a tendency to respond positively to survey questions, which we tried to dissipate as much as possible through options including for example “don't know” and “neither likely or unlikely”).

Minor essential revision

1. There are grammatical errors which need to be corrected.

- We have thoroughly gone through the manuscript and corrected identified grammatical errors (also highlighted in red).