Author’s response to reviews

Title: Global Health Education: a cross-sectional study among German medical students to identify needs, deficits and potential benefits (Part 1 of 2: Mobility patterns & educational needs and demands)

Authors:

Kayvan Bozorgmehr (kayvan.bozorgmehr@googlemail.com)
Kirsten Schubert (ki.schubert@googlemail.com)
Johannes Menzel-Severing (menzel-severing@web.de)
Peter Tinnemann (Peter.Tinnemann@charite.de)

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Author’s response to reviews: see over
Cover Letter to the revised manuscript MS: 1006277917325048

(Revised) Title: ‘Global Health Education: a cross-sectional study among German medical students to identify needs, deficits and potential benefits (Part 1 of 2: Mobility patterns & educational needs and demands)’

Dear Editors,

The authors are very grateful for the reviewer’s comments and believe that their comments have helped to improve the quality of our manuscripts.

We have revised the two-part series on global health education in light of the reviewer’s comments. Please find below a table which contains the authors’ point-by-point responses to the reviewers’ concerns on Part 1 of the series. All major changes in the manuscript are highlighted in yellow. We have also revised figures and tables and hope that the format now complies with the journal’s style.

In response to the Associate Editor’s concern regarding the low response rate, we kindly note that we have changed all wordings in the manuscript which unintendedly raised the impression that the authors generalise their findings. We hope that our revisions have made clear that all conclusions explicitly refer to the analysed sample only. The revised manuscript has also been reviewed by a native English speaking colleague, which improved the English used in the manuscript.

The authors hope that the revisions allay the reviewer’s concerns and comply with the journal’s requirements for publication of the manuscript. For further questions please do not hesitate to contact us.

Yours sincerely,

Kayvan Bozorgmehr
Title: Global Health Education: a cross-sectional study among German medical students to identify needs, deficits and potential benefits

(Part 1 of 2: Mobility patterns & educational needs and demands)

<table>
<thead>
<tr>
<th>Pages and paragraphs in this column refer to: Reviewer's report; Version: 2 Date: 7 May 2010; Reviewer: Kristine M Lohr</th>
<th>Pages and paragraphs in this column refer to the revised article.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reviewer's comments</strong></td>
<td><strong>Authors' comments / changes</strong></td>
</tr>
<tr>
<td>Page 1, para 4, second sentence: Of note is the low response rate (1.4%) from only 8 (22.2%) of 36 German universities.</td>
<td>The authors think that there is a misunderstanding regarding the origin of the data, since students from ALL 36 medical schools replied. (see also revised section in Part 1, page 9, under “Results”, first paragraph). To better visualise the skewed university affiliation of our respondents, we have changed in Part1 the table Annex 1 and replaced it by a figure Annex 1. (see Part 1, Annex 1)</td>
</tr>
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<td>Page 1, para 6, second sentence: They cite a sample size of 1126 students as “large” – I can’t agree with that, since it’s a 1.2% response rate.</td>
<td>We appreciate the reviewer’s comment on the descriptor “large” in the context of the sample size. We hope that the changed wordings of the quoted sentence (see Part 1, page 21, fourth full paragraph) clarify what we mean. It is important to note, that in the section we refer to the high absolute figures among the sample size as a factor, which produced a “comprehensive picture of students’ mobility patterns, their satisfaction with the current supply of global health teaching and their demand for creating more learning opportunities.” A similar picture of mobility patterns etc would not have been produced with a sample size much smaller in absolute terms, but larger in relative terms. (see Part 1, page 21, fourth full paragraph)</td>
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<tr>
<td>Page 1, para 6, last sentence: Almost ¼ (24%) of all references in Part 1 are unpublished works, which seems high for a manuscript.</td>
<td>The number of unpublished works is indeed relatively high. To our knowledge there are no published works on these issues for the mentioned countries. All unpublished works, which we have cited can be obtained from the corresponding author of this article. No action needed.</td>
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</table>

CHARITÉ - UNIVERSITÄTSMEDIZIN BERLIN
Besucheradresse: Luisenstr. 57, 10117 Berlin, Tel.: +49(0)30/450-529002
im Zentrum für Human- und Gesundheitswissenschaften
<table>
<thead>
<tr>
<th>Minor Essential Revisions Part 1</th>
<th>Authors’ comments / changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The last sentence on page 3 is too long and difficult to follow.</td>
<td>1. We have divided the sentence in two. See page 3, last two sentences.</td>
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<tr>
<td>2. On page 4, second paragraph, what is “grey literature”?</td>
<td>2. To our knowledge grey literature is an established term, therefore we feel it is not necessary to explain the term in a particular paragraph. According to the New York Academy of Medicine, “grey literature” is literature which “is produced on all levels of government, academics, business and industry in print and electronic formats, but which is not controlled by commercial publishers.” See also: <a href="http://www.nyam.org/library/pages/what_is_grey_literature">http://www.nyam.org/library/pages/what_is_grey_literature</a></td>
</tr>
<tr>
<td>3. Did you have a way to avoid a particular student from responding more than once to the survey, e.g. if the student was on multiple lists?</td>
<td>3. We highly appreciate this question on the limitations of the recruitment method. The survey software we used had no option to avoid this without conflicting with the anonymity of the survey. We have added a paragraph into the discussion section, where we address this issue. (see Part 1, page 19, under Limitations and Strengths, first paragraph, second and third sentence AND Part 2, page 18, under Limitations and Strengths, first paragraph.)</td>
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<tr>
<td>4. Did you define the difference between global health and Tropical Medicine before they answered the survey questions?</td>
<td>4. No, only the term “global health” was explicitly defined, since tropical medicine is an established term and a distinct, well-defined subject. See amendments in Part 1, page 8, sixth full para.</td>
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<tr>
<td>5. How does and “elective compulsory course” differ from….</td>
<td>We thank the reviewer for her international readers’ perspective. In the revision, we have explained the characteristics of the mentioned course options. See Part 1, page 8, fourth full paragraph.</td>
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<td>6. Is table 1 necessary, since stratification criteria are listed in the text on page 8?</td>
<td>6. The authors feel that Table 1 is necessary since it explicitly defines and summarizes the variables, their criteria as well as the applied abbreviations. Although some explanations are listed in the text (Part 1, under Stratification criteria), we feel is easier for the reader to get a clear picture of the subgroups by looking at Table 1. Further more, in Part 2 of the series we refer to Table 1 when we present the stratification criteria (See Part 2, page 9, under ”Stratification criteria”). Readers who might only read Part 2 can thus find the definitions of the subgroups easier than searching in the text of Part 1.</td>
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<td>7. Page 10, under purposes of IHE, does a medical student have to take a “practical nursing period”? This should be explained for at least a US audience.</td>
<td>7. The authors appreciate this comment. See additional explanation for the international reader in first paragraph under Results, ”Purposes of IHE”, page 11.</td>
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<tr>
<td>8. Table 3: The denominator used for calculations was 363 students, but if you add up… The last sentence in the discussion on page 10 is confusing, “With 2% courses provided by….”.</td>
<td>8. We highly acknowledge the reviewer’s critique on this issue, since the categories are indeed exclusive. We have performed new calculations, in which we analyse the exclusive response options and the multi-option categories seperately. See revised Table 3 and revised methods section in Part 1, page 7, under “Preparation before IHE” as well as revised results section on page 11, under “Preparation before IHE”.</td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
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<td>9. What does NGO stand for (NGO internship) in Figure 3?</td>
<td>NGO stands for non-governmental organization. See added explanation in legend, figure 3.</td>
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<tr>
<td>10. Figure 4 is confusing. ...how can you have &quot;yes&quot; (IHE North or South) and &quot;no&quot; (IHE no) answers in both yes and no y-axis per course?</td>
<td>We are grateful for the comment of the reviewer on Figure 4. However, the authors had difficulties to clearly understand the question of the reviewer and feel that the figure is self-explanatory. To help the reader decipher the figure, we have added clear descriptions to the x- and y-axis and added explanations as footnotes in figure 4 in the revised submission. We hope to help the reviewer decipher the figure with this comment: To avoid misunderstandings: in the following we refer to the horizontal axis in Figure 4 as the ‘y-axis’ and to the vertical axis as the x-axis. The x-axis refers to the “Course participation” and contains the categories “Global Health course” and “Tropical Medicine course”. Among each course category, we have two subgroups “yes” and “no”. For those who completed a course in global health or tropical medicine (yes) and for those who did not (no). Thus, the x-axis contains two categories with four subgroups in total. For each of the four subgroups, the mobility is illustrated on the y-axis. The bars show the proportion of the subgroups “IHE-no”, “IHE-North” and “IHE-South” for each of the four subgroups separately on the x-axis. This is correct, figure 4 is a stacked bar chart, showing the proportion of the subgroups “IHE-no”, “IHE-North” and “IHE-South” among the subgroups of the course participants. Each bar represents 100% of their subgroup on the x-axis. The authors can not figure out, how the reviewer gets the figure 1149. When we add up all the responses for tropical medicine course “yes” and “no”, we receive 1119 responses (680+182+76+48+50=1119). Similarly, we receive 1119 for the global health course responses. It is correct, that 1126 is the reported sample size. The missing figures (n=7) are due to the fact, that 7 students did not specify their IHE destinations, and were therefore excluded for further stratification among statistical tests. This procedure was described in the previously submitted version of the manuscript (Part 1, Page 10, first full sentence). The exclusion of n=7 respondents is again described in the revised version (Part 1, Page 10, under ‘Destinations of IHE’, second paragraph, last sentence). We have also added an explanation to the footnotes in the revised Figure 4, where we again mention the exclusion of n=7 respondents for further stratification.</td>
</tr>
<tr>
<td>I figured out that you added up the numbers in row and calculated the percentages for that row.</td>
<td></td>
</tr>
<tr>
<td>If I add up all the responses for tropical medicine course, I get 1149 responses</td>
<td></td>
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<tr>
<td>(1126 is the reported survey responses); similarly, 1119 for the global health course responses.</td>
<td></td>
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<tr>
<td>11. What is the x-axis in Figure 6? The bottom is cut off in the pdf...</td>
<td>The x-axis is the category axis and shows the universities, the y-axis contains the absolute frequency of responding students per university. See revised Figure 6, which contains only the responses of those universities with more than 50 respondents. No action needed.</td>
</tr>
</tbody>
</table>
12. Figure 8 is confusing. I don't understand how they calculated the 13% and 25% higher proportion of dissatisfied students mentioned in the text (page 12, top paragraph) in relation to the numeric values in Figure 8.

The 13% and 25% higher proportion of dissatisfied students is calculated according to the numeric values in figure 8, and is simply the difference between the red columns.

In details: the proportion of dissatisfied students among the category IHE-South is 78/133=58.6 %. The proportion of dissatisfied students among the category IHE-North is 106/230=46.1%. The difference between the two proportions is 12.5%, with roundings we recieve 13.0%. The proportion of dissatisfied students among IHE-South is consequently about 13.0% higher than among the subgroup IHE-North.

The same calculation works for the comparison of dissatisfaction between the subgroups IHE-South and IHE-no.

No action needed.

13. What does NGO stand for? (second last sentence on page 13)

See explanation added in Part 1, 7th sentence rom the bottom.

14. The sentence beginning on line 6 of second full para on page 14 is far too long (“this contrast raises the question…”)

See revision in Part 1, page 16, third paragraph: sentence shortened.

15. First sentence on page 16: …is missing a verb. …Besides ethics of a student doing what only a licensed physician should do, I also wonder about the supervision available in global health and tropical medicine electives. Who are the faculty off-site.

We have added the missing verb added and briefly included the aspect of supervision.

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**Discretionary Revisions Part 1**

**Authors’ comments / changes**

21. They mention the “outcome of engagement with global health” in the second paragraph on page 3. How will they measure the literacy and ability to link and transfer local health issues to global contexts, and identify associated actions?

We appreciate the reviewer’s comment on this section. The section refers to a definition used by us elsewhere. It was not the aim of this work to measure the described outcome.

In order to avoid further confusion raised by global health definitions used elsewhere, we have deleted the section in question.

22. In the authors’ plea for inclusion of IHE and students’ dissatisfaction with available IHE, I would ask the authors to put this perceived need in the context of competing demands for topics lacking in medical curricula.

Unfortunately, the authors do not completely understand to which section the reviewer’s comment refers to and what exactly is meant by ‘competing demands for topics lacking in medical curricula’.

We kindly ask the reviewer to explain her question again if it is regarded as essential.
This paper is attempting to be two different things. The first is a general informational survey about German students’ involvement in international rotations. The second is a needs assessment for global health and tropical medicine education. However, due to the lack of generalizability in the information obtained I am not sure they can draw conclusions regarding the needs assessment. In addition, needs assessments often define a gap identified through other means, such as comparison with national recommendations or information demonstrating that physicians currently in practice and not able to provide adequate care in some way.

The authors appreciate the reviewer’s comments on the aspect of needs assessments. We think it is important to note that different classifications of “educational needs” exist, ranging from felt needs (what people say they need), expressed needs (expressed in action), normative needs (defined by experts), and comparative needs (group comparison).

In our study, we have analysed perceived needs and have identified a gap between students’ mobility and preparation. Therefore, the authors do not agree that the paper attempts to be two different things.

Whether or not the identified gap and unmet perceived needs lead to inadequate care in practice was beyond the scope of this survey and is certainly an interesting and important issue for further research.

(see Discussion, page 17, second paragraph from bottom)

1. The 1.4% response rate severely hampers the ability to draw any conclusions at a national level. As noted, even within the 1.4% response rate the data is skewed to several schools. Drawing a national conclusion regarding student mobility and curricular offerings is, I believe, beyond the scope of this survey.

The authors may want to consider limiting their conclusions or even only reporting results on the schools with better response rates.

2. Inquiring about offered curricular to ALL YEARS of students does not fundamentally make sense, and might result in a lower “yes” response rate than in truth. For example, if you asked my students who has had a Surgical clerkship, all 1st and 2nd year students would say “no”. All 4th years would say “yes”, and some 3rd year students would respond “yes” and some “no”. It would appear that only 37.5% of students have exposure to a Surgical clerkship at my school, however it is really 100%. It is for this reason that we tend to ask

We acknowledge the reviewer’s concerns about this issue. However, it is not totally clear to us, whether the comment refers to 1. the “prevalence of education in global health” or 2. to the question on “exposure to courses in tropical medicine and global health”.

If the comment refers to “exposure to courses in tropical medicine and global health”, we kindly point out to Table 4, where we already had stratified the exposure to these courses according to the level of study and had compared freshman students with graduating students.
graduating students about their training, not freshman students.

If the comment refers to the prevalence of education in global health, we thank the reviewer for raising awareness about further stratification at this point. We have further stratified the responses regarding the prevalence of education in global health and have illustrated the findings in Figure 6. While the “yes” response rates were slightly higher among the graduating students, the ‘no’ response rates were considerably higher. (see also: revision on page 12, under “Prevalence of and demand for global health education”, second para.)

We also kindly note that inquiring about offered curricular to all years of students makes sense in so far, as that there is a quite respectable time-span of 5 years between freshman and graduating students. In this time-span, new courses and curricular offerings might have been introduced for freshman students by reforms, so that asking only graduating students might similarly bias the results.

We have addressed this fundamental issue in the discussions section, page 20, third full paragraph.

3. Likewise, asking very junior students what should be in their curriculum is also problematic. Do first year students have a well-founded appreciation for what knowledge, skills, and attitudes they require in order to be physicians today? A needs assessment often asks those in practice what they SHOULD have learned, or compares it to national/international standards.

This is a very important comment. We already discussed this issue in the last paragraph of the discussions section (page 19) before “Limitations and Strengths”. We additionally discuss this fundamental issue in the discussion on page 20, second full paragraph.

We assume that the reviewer’s comment refers to the perceived need and demand for global health among students in our sample?

If yes, we have once again assessed the distribution of response options among these questions and have stratified the responses by students’ level of study to assess whether responses of freshman students considerably differ from graduating students.

See Figure 11 and Figure 13 in the revised submission as well as Page 12, second and third full paragraph and Page 13, second paragraph from bottom.

A needs assessment among those in practice is certainly an important issue for further research (see discussion, page 22, last sentence before “Conclusion”).

4. The survey only asked if students had FULL COURSES (this implies many hours spent on the material) in global health and tropical medicine, which might lower the “yes” rate. I might imagine that they had exposure to these topics as parts of other courses (for example, Infectious Diseases). For example, I would be quite surprised if such a low percentage of students learned about malaria.

Please comment on this limitation, and also the appropriateness of the survey design.

We welcome the reviewer’s comment on this issue. However, as we stated in the “purposes of this study”, our aim was to examine the exposure of students to full courses. Therefore, the authors feel it is legitimate to ask for full courses.

Regarding the prevalence of global health education, however, we differentiated between self-contained courses and global health topics as part of other courses. (See Methods, page 8, first paragraph as well as Figure 7). Figure 7 clearly shows that in 31% of cases, global health topics...
of an entire course on these topics.

exist as part of compulsory courses.

We agree that e.g. malaria is certainly covered as part of Infectious disease courses and have addressed this issue in the discussions section (See discussion, page 17, second paragraph onwards)

5. Likewise, this report relied on self-report of curricula and experiences. Many students may not recall correctly, especially if this was material learned several years prior. The students may have been exposed to these topics and not identified them as global health or tropical medicine, or may simply not recall covering the material.

The authors thank the reviewer for her comment. Like every self-report, we have to rely on the assumption that students recall correctly what they have been taught, even if the material was learned several years ago. We think it can be assumed that medical students are intelligent enough to recall to which topics they have been exposed to and to which not.

To reduce the possibility that students do not identify topics they have been exposed to as global health topics, we used an operational definition of this term (see Methods, page 8, last sentence before Demographics: We defined 'global health courses' as 'courses in which students analyse the influence on people's health of factors such as poverty, debt, globalisation, health systems and health financing, human rights, hunger, armed conflicts and migration'.) Tropical medicine is an established and distinct subject and does not need to be defined explicitly.

We would agree with the reviewer if we would have used an abstract or more complex definition.

No action needed.

6. Again, having students of all years report on their international electives likely gives an artificially low "yes" rate. The authors would not want readers to unintentionally believe that only 1/3 of German medical students do international rotations during their training. The likely "true" number is much closer to the 5th and 6th year responses. The authors may want to comment on this as well.

We highly welcome the reviewers reflection on students' international electives and the artificially low "yes" rate. We have analysed our data again and stratified students' mobility by their level of study. (see Figure 1 as well as Page 10, first sentence under "Student mobility")

7. Only 39% of students felt that global health course opportunities were not adequate, and only 15% felt that the global health learning opportunities should be compulsory. Only half of students even knew what was offered at their institutions. What percent of 5th and 6th year students felt this way?

Again we highly welcome these reflections. We have stratified the respective responses again by level of study and have illustrated the results in figures 11 and 13. See also added sections on page 13, fourth and fifth paragraph.

8. Might the only viable conclusion be that, in many German...
Schools, students are not aware of the current curricula in these areas, and that a large percentage do at least one rotation in another country?

**- Minor Essential Revisions**

There are numerous grammatical and punctuation errors throughout the manuscript. I would recommend that this be reviewed by an individual who speaks English as their primary language. Some examples (this is only a small example) of these include:

1. page 7, 5th line from the bottom - remove “;” and replace with a comma. Also remove the comma after the word “respondents”.
2. Line 1, page 4, remove “out”
3. Page 5, second paragraph, second sentence, remove the comma (not needed)
4. “Latter” not “Ladder”, page 11
5. Page 13 has a text problem.
6. Check language on page 14, 5th line from bottom. The sentence that begins with “Especially” is not a full sentence.
7. Consider replacing “faculty” with “school” or “institution”, as medical faculties is not the correct terminology for the US-based reader. Faculty instead refers to the individuals employed by the school.

Please comment on the difference between “elective compulsory” courses as opposed to “optional” courses?

**- Authors’ changes / comments**

The revised version of the manuscript has been reviewed by a native English speaker.

1. -7.: changed

**- Discretionary Revisions**

The authors might consider shortening some of the results sections a bit. For example, when the authors state that 91% did not have a course in global health, they do not really need to then report the dichotomous result that 9% did. (page 10)

We have adopted the reviewer’s advice where possible.

**Quality of written English**

This article is not suitable for publication unless extensively edited. Please see my comments above in the “Minor Revisions” section. Also please note that my list of the language issues is by no means complete.

The revised manuscript has been reviewed by a native English speaker.

**Statistical review**
<table>
<thead>
<tr>
<th>I do believe the results should be reviewed by an expert statistician. Such a review may be needed to assess the validity of the authors’ conclusions given the low response rate on the survey and the skew in originating schools. I would ask the statistician if the schools with only a few responders should be excluded from analysis entirely. Also, some of the subgroup analyses may need to be redone.</th>
</tr>
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<tbody>
<tr>
<td>The authors agree with the low response rate and the skew in originating schools. However, since the authors do not attempt to draw conclusions on med.school level, we do not see any benefits from excluding schools with only few responders - especially against the background, that most of the subgroup analyses referred to participation in international rotations and courses in global health and tropical medicine, i.e to variables which are totally independent from students’ school affiliation. The authors, however, are open for further opinions from other statisticians and welcome their comments if needed.</td>
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</tbody>
</table>