Author’s response to reviews

Title: Future career plans of Malawian medical students: a cross-sectional survey

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RESPONSE TO REVIEWERS’ COMMENTS

Thank you to all the reviewers for their valuable comments. We address their specific comments separately below.

REVIEWER 1

ABSTRACT

1. Pre-service training of doctors – not clear what this is

“Pre-service training” is a phrase used frequently in human resources for health to describe the training of health workers before qualification, “service” being practising or “serving” as a health worker. It is used in preference to “undergraduate” as many health workers complete diploma or less formal training courses rather than degree level qualifications.

However, as only medical training is discussed here and to avoid confusion, we have changed “pre-service” to “undergraduate” on page 2.

2. Work or train abroad – not exactly the same. Do the students who wish to train abroad plan to go back to Malawi and practice medicine there?

We aren’t able to assess this distinction from this survey, but it would be interesting for follow-up work. We feel the amalgamation of work and train abroad here is justified as those graduates who train overseas are more at risk of remaining overseas after the completion of training. This occurred frequently when Malawi used to send trainees to the UK and was the impetus for setting up both the undergraduate and postgraduate medical programmes.

3. Give a brief overview of the main sections of the questionnaire.

Page 2: The following sentence has now been added to the Methods section of the Abstract: “This [questionnaire] included questions on background characteristics, education before medical school, and future career plans”.

4. Add the response rate

Page 2: the response rate has now been added to the Abstract, which now reads: “149 students completed the questionnaire out of a student body of 312, a response rate of 48%”.

5. Statistical analysis – specify which regression analysis was used! Note: no results of regression analysis can be found anywhere in the paper!

Apologies – this was a mistake left in from earlier versions of the paper.

Page 2: This sentence has now been changed to: “Chi-squared tests were performed to investigate the relationship of student characteristics with future career plans.”

6. A trend test - ? which one, it was not mentioned in the Statistical analysis Section

This was a Chi-squared test for trend, which has now been specified both in the Abstract (p 2), Analysis (p 8), and Results (p 10) sections.
7. Public sector was mentioned – is there a private one?

There is a small but growing private sector in Malawi. We take the point here that the
distinction may be confusing in the abstract and have changed the sentence to read: “The
effectiveness of the substantial upscaling of medical education in Malawi may be diminished
unless more medical students plan to work in Malawi after graduation.” (page 3)

8. A-level – additionally explain for less informed readers

P2-3: We have now modified this sentence to: “Medical students who completed a
“premedical” foundation year at the medical school were significantly more likely to have
immediate plans to stay in Malawi compared to those who completed A-levels, an advanced
qualification obtained after six years of secondary education”.

P8: In the Settings section, we have also included: “Candidates may take “A-levels” in
science subjects. A-levels are advanced qualifications obtained after six years of secondary
education compared to the normal four years and are offered only in certain private schools
in Malawi.”

9. Keywords: retention – a bit unusual, add Malawi to Keyword list

Retention has been removed from the Keyword list and Malawi added.

BACKGROUND
1. “Reasons include a chronic underproduction of trained personnel and
out-migration, both from the public sector and internationally [7].” – confusing end
of the sentence

The end of this sentence has now been changed to: “both from the public sector and the
country as a whole”.

2. Describe the educational system in Malawi in greater details for international
readers, as well as the training for medical doctors (how many medical schools,
training for obtaining a specialty, i.e. gynecology)

We have now added a Setting subsection under Methods which provides this information.

3. Describe the health care system in brief – I had an impression of public health
sector vs. private – is this true, and if so – why?

This information is now also included under the Setting subsection. As mentioned above,
Malawi has only a small private sector (although this is growing). A distinction was made in
the paper between public and private sector as medical education in Malawi is heavily
subsidised by government with the intention that graduates work in public sector facilities.

METHODS
1. Details on statistical analyses are lacking – which statistical tests were used

Chi-squared tests were performed. The Analysis section of Methods has now been improved
to read: “Pre-specified analyses were carried out using Chi-squared tests (or Fisher’s exact
test where expected frequencies were less than five) to compare future immediate plans
against: gender, year of study, type of secondary school (government/private) and higher
education. A Chi-squared test for trend for year of study against immediate plans to work or
train in Malawi was performed. We also investigated differences between respondents and non-respondents using Chi-squared tests. Stata-10 was used for all analysis.” (P8)

2. **Focus group – how large was it?**

The focus group was composed of five medical students from different years, selected through convenience sampling. Details of the focus group have now been included on page 9.

3. **Postgraduate training – explain in more details what this is (clinically or research oriented?)**

The Masters of Medicine offered by the College of Medicine in Malawi includes both clinical and research components. Doctors work and train in the tertiary hospitals under specialist supervisors, whilst completing a dissertation and participating in evidence-based medicine activities such as journal clubs. Postgraduate training is now also described under the Setting subsection.

**RESULTS**

1. **“Figure 3 compares the 2008 population densities for each district [15] to the percentage of students who indicated that district as their district of origin.” – a bit strange sentence formulation, please rephrase.**

This sentence has been modified to read: “Figure 3 compares the district of origin the population densities in 2008 [15] per district to their district of origin”.

2. **“As graduates must complete 18 months of internship before registration with the Medical Council of Malawi [13], these students may not intend to return to Malawi afterwards“ – since there was no specific question about this issue, this statement is conclusion beyond the results**

We have now removed this statement.

3. **“If the service and training options are combined,“...- is the service actually practicing medicine?**

Yes, service is practicing medicine i.e. the “working” options. We agree that this may be confusing, so we have modified this sentence to read: “If work and training options are combined...” (p13).

4. **“Medical students who completed the premedical year were significantly more likely to have immediate plans to stay in Malawi compared to those who completed A-levels (Fisher’s exact test, p = 0.037), but not BSc (#2 = 0.147, p = 0.70).” – please give percentages**

We have now included percentages for these subgroups and the sentence now reads: “Medical students who completed the premedical year were significantly more likely to have immediate plans to stay in Malawi compared to those who completed A-levels (31.5% versus 3.4%, Fisher’s exact test, p = 0.037), but not BSc (31.5% versus 5.4%, $\chi^2 = 0.147$, p = 0.70).”

**DISCUSSION**

1. **“Nearly 40% of medical students who responded to this survey plan to leave**
Malawi after graduation. “– this is a bit too strong conclusion, since it is based on a single point in time, it is merely based on a current situation and thinking of young people, who can still reconsider their wishes. This results implies that …

We take your point about this survey being a single point in time and plans may change in the future. We have now rephrased this paragraph to emphasise that these may be tentative and only current plans: “Nearly 40% of medical students who responded to this survey are considering leaving Malawi after graduation and nearly half at some point in the future. A third of respondents are currently planning to train outside Africa after graduation.”

3. Low response in 4-5 year of studies – try to explain why

This is now explained more fully on page 17 as follows: “Our interpretation is limited by the much lower response rate in years 3-5, where it was more difficult to access students as they were primarily based in hospitals, rather than the lecture format of earlier years, so questionnaire distribution was limited.”

4. Is there any information in the literature from countries which employ doctors from Malawi?

There have been surveys of non-European Union doctors in the UK, which found that the most frequently stated reason for emigrating to the UK was for postgraduate training opportunities [1-2]. However, these results were not broken down by country of origin.

There has been some qualitative work comparing the life histories of migrant Malawian nurses in the UK with those who have remained in Malawi [3], but nothing yet with doctors.

4. Recommendation for further studies – investigate into reasons for leaving Malawi and training somewhere else, and where

Thank you for this suggestion. We have now included the following sentence in the paragraph on future work: “Qualitative work with graduates who have left Malawi for training elsewhere and reasons for their choice of destination would also be useful”(page 18).

REVIEWER 2

Minor essential revisions:

1 - Try to explain the concentration of student origins in some districts - are they urban districts?

Yes, Blantyre, Lilongwe, Zomba and Mzuzu are the main urban areas of Malawi.

We have now included this information in the Setting subsection under Methods and also modified the “District of origin” subsection on page 9 to read “The main urban areas of Blantyre, Lilongwe, Zomba and Mzuzu have a higher population density and percentage of originating students”.

2 - In the map indicate the location of the medical school – I believe it is in Blantyre, but not sure

Page 7: In the new Settings section, we have added “There is one medical school in Malawi based in Blantyre” as opposed to including the location of the medical school on Figure 3 as when we tried this addition we felt it detracted from the other information contained in the map.
3. Reflect on the implications of your findings for student selection policy

Page 14: We have added the following paragraph: “This study indicates that there are bodies of students with differing intentions to work in Malawi after graduation. This offers some support to a policy of targeted student selection in order to enhance retention of doctors in Malawi, however more research would be needed to tease out those student characteristics associated with retention.”

4. In results, background, 2nd paragraph of secondary education, 38.4% of respondents is not "most"

“Most” here is not referring to the majority (>50%), but the most frequent response, which is private schooling.

5. Although you collected the data, you do not indicate if lack of availability of in-country training for the intended specialty is a reason to migrate

We have now included analysis of these data in the Results section. We looked at the most frequent intended specialty and also whether the lack of availability of in-country training for the intended specialty is associated with immediate plans to leave Malawi. There was no relationship for the latter.

REVIEWER 3

• In this report the response rate was low overall (48%). The investigators need to explore the differences between respondents and non-respondents. These differences can be explored by evaluating the differences between the respondents and the overall student population at that time. For example, gender, type of secondary school education, type of premedical school education (A-level, premedical year..etc). This information is usually available in the medical school registration departments and will help identify potential biases and the direction of the effect of these biases if we understand the differences among these groups.

This is an excellent suggestion. We have now analysed the differences between respondents and non-respondents by gender. We found that non-respondents did not differ significantly from respondents by gender except in Years 1 and 2, where virtually all females in both years answered the survey. However, an analysis of immediate plans by gender showed no significant differences between males and females with regard to staying in or leaving Malawi. We have included these points on pages 11 and 17.

Unfortunately other characteristics of the overall student population are not held to the same level of detail as gender, but we could obtain estimates if the reviewer feels gender alone is insufficient.

• It is important to report the response rate in the abstract

This has now been included on page 2.

• In the background second and fourth paragraph there is a discrepancy that needs to be corrected. In the second paragraph the authors mention that the national medical school opened in 1992. While in the fourth paragraph they mention that the school was founded in 1991.
This is due to the medical school being founded in 1991 but the first students were not enrolled until 1992. As this is confusing, we have omitted the “in 1991” in the fourth paragraph so it now reads: “Of the 254 graduates since the foundation of the medical school, 123 were working in Malawi.” (page 5). We have deleted the paragraph on medical education from the Background and placed this under Setting in Methods instead.

- Under the results section, there is a subheading of background. This may be confusing to readers. It is best if the authors can describe all background information in the background or in the method section under population and setting.

Thank you for this comment, we agree that this is confusing and have removed this subheading on page 9.

We have now included Setting and Population sections under Methods, containing descriptive information previously included elsewhere in the paper.

- Under the results section and the subheading of future plans, please refer to figure 5 which summarizes the results of future plans.

Figure 5 is referred to on line 3 of this subsection.

- In the discussion section, it will be helpful if the authors explored additional reasons for the differences between the intentions in premedical students and the medical students. Does the admission committee for medical school view these intentions negatively? In the sixth paragraph the authors mentioned that socially desirable responses were less likely due to the anonymous nature of the survey. They need to consider this type of bias when exploring reasons for the differences among premedical and medical students.

Currently the admission to the Malawi College of Medicine is based on academic results and district of origin alone. There is no investigation of future career intentions of premedical students as a criterion of admission. We do, however, accept your point that premedical students may be more likely to provide socially desirable responses than older, more confident medical students. We have added this following sentence to the relevant paragraph on page 16: “These students may also be less confident to give responses that break with social expectations (e.g. leaving Malawi), given their younger age and recent entry into medical school.”

- The study is underpowered to detect a trend for year of study against immediate plans. The author should comment on the lack of significance as an issue of lack of power rather than lack of trend.

We have now changed the relevant section in Results to read: “A Chi-squared test for trend for year of study against immediate plans to work or train in Malawi was not significant (although numbers were small in the higher years and there may have been insufficient power to detect a trend)” (page 13).

Discretionary Revisions

- It will be helpful to give some details about how did the investigators select the students for the focus group to develop the questionnaire?
We selected them by convenience sampling to represent a range of years in the medical school. More details on the focus group have now been included on page 9.

- In the results section, is it better to mention the results as they are without the authors’ impression. For example under the subheading of future plans, the author could simply say 47% of medical students intend to practice in Malawi after graduation. However, 31.5% intend to immediately train elsewhere...

We have now significantly modified the Results section to take on board this comment. For example, the Future Plans subsection now reads: “Nearly half of medical students intend to practice in Malawi immediately after graduation (47.0%), compared with 1.3% in Africa and 4.0% outside Africa. Whilst 2.0% of students are planning to train in Malawi or in Africa respectively, 31.5% intend to train outside Africa immediately”.

References