Title: For money or service? A cross-sectional survey of preference for financial versus non-financial rural practice characteristics among Ghanaian medical students.

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Author's response to reviews: see over
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Re: For money or service? A cross-sectional survey of preference for financial versus non-financial rural practice characteristics among Ghanaian medical students.

Dear Editor-in-Chief,

Thank you very much for giving us the opportunity to revise and resubmit our paper. We appreciate the comments of the editors and the reviewers and address them below. We indicate corresponding changes in the text with highlighting. Please let us know if you have further questions.

Sincerely,

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Reviewer 1: Farrah Mateen

Background: para 2, citations 5-7 seem to apply to developing country-derived literature although this is not stated outright in the paragraph.

We’ve changed the first sentence of paragraph 2 to make the sourcing of these cites clearer: “A number of factors pull health workers to urban areas in low- and middle-income countries (LAMICs).”

Methods: p. 8, last para, Under "sample," part of this could come under the discussion (motivation to choose these participants).

We shortened this paragraph to: “We surveyed Ghanaian medical students in their fourth year. These students had experienced the clinical environment, but not yet made decisions about job placements.”

The following text was moved to the 7th para of the Discussion section: “We selected a student population for this study, instead of practicing physicians, because recent
Medical school graduates are the main targets of rural physician recruitment by the Ghana MoH. Moreover, surveying students allowed us to capture both those who will stay and work in Ghana as well as those who will emigrate shortly after graduation – the latter would be lost in a survey of practicing physicians in Ghana. In fact, nearly two-thirds of today’s Ghanaian medical students have contemplated emigration by their fourth year [23]. Understanding these students’ motivations and perspectives is key to solving the HRH crisis in Ghana.

* p. 12 sentence beginning with "Over half..." delete either "were" or "would"

These two categories listed “are likely to” and “definitely would” are directly from the survey. We’ve changed the text to clarify these categories: “Over half of students stated they were likely to OR definitely will work in a rural area (49% and 6.6%, respectively),”

* p. 13 could explain Ewe is an ethnicity (as per table) which may not be apparent to all readers

Added the following sentence to the 4th para under Statistical Analysis: “We examined the impact of Ga/Dangme, Ewe, and minority ethnic backgrounds, with Akan being the referent.”

* p. 13 UDS student sample is small and I'm unclear how valuable it is know what the UDS students thought (what are the implications of that student group having different opinions in general)?

We added the following sentence to 4th paragraph under Statistical Analysis: “Although UDS students represented a small proportion of this population, we included them in this analysis because UDS is located in a more rural area, the northern city of Tamale, than the UG and KNUST, which are in the larger cities of Accra and Kumasi, respectively. We included these students in our analysis to see if their preferences differed in a systematic way. We examined the impact of Ga/Dangme, Ewe, and minority ethnic backgrounds, with Akan being the referent.”

* p. 13 The fact that students seeking emigration value salary is seemingly an important finding of the questionnaire. Do you have any background on what the salary currently is for Ghanian physicians (rural/urban)?

We added the following text to the first paragraph under Discussion: “Compared with higher-income countries, physician salaries in Ghana are very low – equivalent to approximately 1,100 USD per month in 2008 [31]. While rural and urban physicians receive the same “base salary, the Ghana MoH provides rural officers an additional deprived area incentive in an attempt to compensate for lost locum opportunities, which are almost exclusively in urban areas and can represent a substantial income supplement.”

* p. 14 I didn’t understand what management style referred to exactly and the table legend didn’t explain this well.

We added text describing the levels of all attributes to the Variables and Questionnaire Administration section: “The attributes were Salary (base salary to 2x base salary); Allowance for Children’s Education; Infrastructure Equipment, and Supplies (basic...
versus advanced); Management Style (supportive versus unsupportive); Contract Length (2 versus 5 years); Housing (basic versus superior housing); and Transportation (utility car)."

I wonder how important the "young" or "old" distinctions are given that the age range is narrow and "old" is 25 years old!

We included this variable in our analysis because other studies have shown age to be an important factor determining rural practice. Age did explain some preference heterogeneity in our multivariate model, despite being a narrow range. We added the following text to the 2nd paragraph in the discussion section: “Qualitative research should be undertaken to determine the reasons why sociodemographic background should impact preference for rural incentives.”

Reviewer 2: Patricia Odero

1. Background, paragraph 8, sentence 2: spelling, salary top up and not “salary top” corrected

2. Methods, Variables and Questionnaire Administration, paragraph 3: there are more than 7 variables, so it is unclear the variables of interest.

We have rewritten this section to clarify the dependent variable and the independent variables of interest (Variables and Questionnaire Administration section, paragraphs 2-3).

3. Results: The presentation of results from Tables 2 and 3 (paragraph 3 and 4) is unclear. The authors may consider re-writing these two paragraphs to ensure clarity in the main messages that are discussed thereafter.

We re-organized this section so that the different attributes are separated by bulleted subheadings. We also broke apart some of the more convoluted sentences where multiple relationships were described so that most sentences describe 2 ORs at most.

Table 2 shows the results of the bivariate analysis. The results are discussed below by attribute.

- **Salary:** UDS students and those considering emigration ranked salary as more important than UG students and those not considering emigration [OR 3.51 (1.06-11.65); OR 1.76 (1.09,2.84)]. Ewe students and those with rural living experience students ranked salary as less important than Akan students and those without rural experience [OR 0.39 (0.20-0.75); OR 0.58 (0.35,0.97)]. Fee-paying students ranked salary as less important than sponsored students [OR 0.53 (0.28-1.00)].

- **Infrastructure:** International students ranked infrastructure as more important than Ghanaian students [1.98 (1.05-3.73)]. Those willing to work in a rural area ranked infrastructure as more important than those unwilling to work in a rural area [OR 1.59 (1.03-2.46)].
• **Management style:** Fee-paying students ranked management style as more important than sponsored students [OR 1.93 (1.01-3.66)]. Those willing to work in a rural area ranked management style as more important than those unwilling to work in a rural area [OR 1.59 (1.02-2.47)].

• **Contract Length:** UDS students and those with rural experience ranked reduced contract length as a more important rural practice attribute than UG students and those without rural experience [OR 3.47 (1.18-10.24); OR 1.65 (1.00-2.73)]. Younger students and international students ranked reduced contract length as less important than older students and Ghanaian students [OR 0.44 (0.20-0.99); OR 0.48 (1.00-2.73)].

Table 3 shows the results of the multivariate analysis with all sociodemographic factors and career plans. The results are discussed below by attribute.

• **Salary:** Students who have considered emigration ranked salary as more important than those not considering emigration [OR 1.93 (1.11-3.36)]. Ewe students and those with rural living experience ranked salary as a less important rural practice attribute than Akan students and those without rural living experience [OR 0.39 (0.18-0.87); OR 0.45 (0.24-0.84)].

• **Infrastructure:** Younger students and international students ranked infrastructure as more important than older students and Ghanaian students [under 23 years old: OR 3.38 (10.7-10.68); 23-24 years old OR: 4.10 (1.33-12.69); international OR 4.45(1.32-15.00)]. Those willing to work in a rural area ranked infrastructure as more important than those unwilling to work in a rural area [OR 1.77 (1.06-2.97)]. Female students ranked infrastructure as a less important rural practice attribute than male students [OR 0.54 (0.31-0.93)].

• **Management Style:** Younger students and those paying school fees ranked management style as a more important rural practice attribute than older students and sponsored students [OR 3.38 (1.05-10.91); OR 2.32 (10.4-5.19)]. Those willing to work in a rural area ranked management style as a more important rural practice attribute than those unwilling to work in a rural area [OR 1.86 (1.09-3.17)]

• **Contract length:** KNUST students ranked reduced contract length as a more important attribute to rural practice than UG students [OR 1.96 (1.10-3.50)]. International students ranked contract length as less important than Ghanaian students [OR 0.27 (0.08-0.90)].

**Consistent use of the passive voice in the paper as opposed to the active voice, first person plural (we).**

We conducted a thorough editing of the entire manuscript and reworded many of the passive voice sentences to the active voice.