Author’s response to reviews

Title: An analysis of the global pharmacy workforce capacity trends from 2006 to 2012

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“An analysis of the global pharmacy workforce capacity trends from 2006 to 2012”

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Human Resources for Health

Manuscript revision summary based on Reviewer reports:

Reviewer #1: This is a very important work, unique in the field. Nevertheless, some major changes are required in order to improve clarity of information.

Introduction

Pg5, L21-28: The sentence “In 2012, the survey [...] and 34 to the 2006 survey” would fit better in Methods section.

*Thank you. We would suggest leaving in “background” as this sentence refers to a previous publication of pharmacy workforce and provides context for the reader. An additional reference is now provided on methodology on page 6.

Pg5, L 57-60 and Pg6 L3-7. Info on the impact of access to pharmacy teams on morbidity and the importance of skilled pharmacy workforce on equitable access to medicines should be based on evidence. Please, include references on this.
The main point here is that this Introduction text does not point out clearly the importance of the study. The objective of the study should be clearly presented at the end of the background section.

*Thank you. We have included a greater focus here as suggested. Pg5 now includes: “Policy developments from WHO Human Resources for Health clearly indicate current and projected chronic shortages of the healthcare workforce and the availability of a skilled pharmacy workforce for access to expertise and essential medicines has been made clear 6,7. The objective of this paper is to recognise the key issues and current trends affecting the global pharmacy workforce. In particular, the data provides a focus on workforce distribution over time, to provide better intelligence on trends in capacity by country.

Methods

pg6 L2: The sentence "The methodology [...] steps:" is unnecessary.

The text is repetitive here. Please, "clean" the text with a better flow and presenting each info only once.

It is missing a better explanation on how data was obtained, both, the survey and the literature search. Who were the respondents? How was the questionnaire (blocks of info); regarding to the search: how was it conducted, in which databases?

*Thank you. We have now included reference to previous publications on method, including data collation and retrieval. Included in references.

A better explanation on the analysis is missing. E.g. what exactly the "Relative capacity change as a Z-score" is?

*Thank you. This has been clarified in text (page 8)

Results

Figure 1 and Table 1 present the same info. They should be combined in one same illustration.

*Thank you. Table 1 has been removed. Figure 1 now includes both absolute and relative changes in workforce density measures and text has been adjusted to describe this.

Pg 8 L 7-10. The sentence "capacity is measured [...] of this report" would fit better in Methods.

*Done.
Pg 8 L45-49. Please, present all comments on Figure 6 in a same paragraph. Actually, regarding to this Figure 6, since the confidence interval is so high in each WB group, isn't it better to present the linear correlation between pharm. density change and GDP pc?

*Thank you. This has been done. The additional correlation has been inserted into the text to further support the assertion made:

“Figure 6 also shows that an increased capacity trend is more prevalent in higher-income countries and is associated with economic factors as measured by World Bank income status. There is a significant association between absolute change in capacity (over time) and higher country level income status (Spearman’s rho = 0.419, p=0.002)”

Discussion

Authors failed to consider the existing evidence when discussing data. There is no citation in this section.

Limitations should be addressed.

*Thank you. We have included further references and included following text on additional limitation:

“Other limitations include the lack of direct association between capacity as a measure and whether there is a sufficient supply of pharmacists with the relevant competencies and skill mix. For countries with already low densities of pharmacists it is possible that there is a gap between the need for pharmacy services and the actual supply of pharmacists.”

Reviewer #2: Initially, I would like to offer my congratulations to the author. The formulation of national human resources for health policies and strategies requires evidence-based planning to rationalize decisions. In this way, the manuscript at hand is relevant and important in current discussions on the pharmacy workforce capacity in many countries.

However, I have considerations about the content of the article and comments on the methodological processes.

I suggest that the author explain and explore the sentences bellow better:

"Missing time-point data for some countries (data gaps) were subject, where possible, to literature and www data searching to capture possible missing data. Country level capacity data were plotted against time to identify trends coupled with comparative analysis of the trends." (Repeated throughout the text)
The author should report the impact of this data to the final results and conclusions of the survey. In the same direction the author should better detail the methodological implications of working with countries that have information for only two years and at the same time with countries with information for three years.

*Thank you. These points have been raised and discussed under both the results section (page 7) and limitations at the end of the discussion (page 10).

I would suggest too, that the authors make a revision of the manuscript trying to identify and adjust excessively general statements and without scientific proof, as the examples below (That is, to deepen the bibliographic reviews on the subjects):

"Some decreases observed in density of pharmacists may be a result of net migration to other countries or other factors such as changes in national health policy."

"Changes may also reflect differences in role as pharmacists may be contributing to a nation's healthcare in nonpatient facing roles in the pharmaceutical industry and pharmaceutical manufacturing units."

*Further citation has been added and text clarified (for example on page 8 of discussion).

Finally, I indicate that the author details the limitation of the study to work with trends, but only to have information until 2012. There is a great devastation until the current year (2017).

*Thank you. We have included further description of limitations (see above). Data is inclusive of period 2006 – 12. Further work is underway to extend the data period, but this will not be ready for publication until 2018 earliest. We believe the importance of the current data back is sufficient that publication should proceed, given data stability in workforce capacity measures (please note we submitted this manuscript in December 2016 and cannot be responsible for the delay since then).

Sincerely,

Portela, GZ.