Author’s response to reviews

Title: The children’s nursing workforce in Kenya, Malawi, Uganda, South Africa and Zambia: generating an initial indication of the extent of the workforce and training activity

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HRHE-D-18-00182 Response to reviewer comments

We are grateful for these suggestions and appreciate the opportunity to improve our manuscript. Our point by point response to the comments made by the reviewers is below. We have also uploaded a version of the manuscript with changes tracked. Page and line numbers refer to the original submission.

We thank the reviewers for their input and their engagement with this work.

Reviewer 1

1 What is the exact population of children (paediatric population - people aged less than 18 years) in the 5 selected countries. The authors have only provide a broad description on Page 2, Lines 16-18 where they said "Close to half the population in many African countries is aged under 18 [3]". However, this is very non-specific and it is difficult to compare the number of available paediatric nurses to the needs of the 5 countries studied?...Therefore it would be helpful and useful to report the exact statistics of the paediatric populations (people aged less than 18 years) in the countries studied … To clearly identify whether the number of "children's nurses" being produced is adequate or inadequate for the current needs and future population growth.
Thank you for this suggestion, which we agree will help readers to approach the paper with a better sense of the relationship between the numbers of children’s nurses and the size of the child population in the five countries.

We have thought carefully about the clearest way to present this information and consulted the journal’s guidelines on presenting statistical information, since it could be misleading to try to represent the very small numbers of nurses relative to population as simplified ratios (converting to nurses per 10,000 as per recommendations unfortunately produces a ratio of less than one half of a hundredth of a nurse per 10,000 children, which is difficult to present and interpret).

An alternative way to look at the numbers of children’s nurses is to state what percentage of nurses on the national register are children’s nurses. We have added this, and used the percentage of children’s nurses on the English Nursing and Midwifery Council register as a point of comparison.

Changes made:

Page 2 line 16: Changes as shown in bold: “Children aged 0-15 make up between 29-48% of the total population in the five countries studied (see Table two) [3].”

Table two (page 7 line 1) is now titled Reported children’s nursing workforce capacity (2015) relative to child population. We have added two pieces of information to Table two. Row one now shows children 0-15 years (as a number and as a % of total population), and we have also shown what percentage of the total registered nursing workforce is made up of children’s nurses.

Page 6 line 50. Description of table two: sentence added. “Data are presented alongside population estimates for babies and children 0-15 years to enable consideration of the numbers of children’s nurses relative to population.”

Information added (page 7 line 43):

“It is evident that the number of children’s nurses is extremely small in relation to the extensive child population. Taking Malawi as an example, the ratio of children’s nurses to children aged 0-15 is approximately one nurse per 83,696. Children’s nurses make up 1.9% of nurses on the register in Malawi, compared with 7% of nurses on the register in England [20]. It would be preferable to consider the data in relation to staffing levels and patterns of demand for care in paediatric wards and health facilities, but the ability to estimate workforce needs accurately for specialist nursing cadres in LMICs requires further development.”
“The introduction of specialist children’s nurses into these health systems is still at an early stage, and training activity is on a small scale with only South Africa having more than one training centre. Three of the five countries began training children’s nurses less than five years ago. It is to be expected therefore that at this stage the numbers of children's nurses will be small, and inadequate to meet population needs. However, these limited data, obtained in the absence of reliable official information, highlight the existence of a small but growing cohort of specialist children’s nurses within the five countries, supported by relatively recently-established training activity in four of the five countries. Training output across the five countries adds 260 children’s nurses to the workforce on average annually. Given the investment in health workforce development this represents, there is a need to consider how HRH information systems can best support informed decision making.”

We agree that it would be helpful to readers to be able to compare workforce size to recommended ratios. We think that looking at specialist nursing workforce needs in relation to staffing levels and patterns of demand for care in paediatric wards and health facilities is actually a more useful and appropriate way to think about adequacy of the current workforce than nurse:population ratios. Unfortunately the means to do this reliably with specialist nursing cadres does not currently exist. Two of the authors of this paper are currently designing a study to address this.

Our study design included asking respondents and interviewees about the existence of recommendations for staffing norms specific to paediatrics. We are not aware of any specific recommendations made by the WHO or major global health organisations in relation to paediatric nurse ratios in LMICs.

We were only able to identify information suggesting that an attempt has been made to set national staffing norms for children’s nursing for one country in our study - South Africa - but the government has not adopted a formal policy. The South African Ministerial Advisory Committee on Child Morbidity and Mortality made recommendations about children’s nursing
staffing levels in 2014 but these recommendations have not been formally adopted by the government. The South African Strategic Plan for Nurse Education and Training sets ‘safe staff levels’ for a variety of paediatric settings but is silent about specialist children’s nursing ratios. This study did not identify any evidence that national ministries in the other four countries had set staffing norms for paediatrics. Some of the countries in this study have developed health workforce norms and standards using WISN but these deal with all nurses as a single category.

Overall, while the reviewer raises an interesting question, the ability to estimate this accurately requires further development.

We therefore feel that adding the information provided above to explain in full why it is not possible to refer to or calculate desirable ratios is beyond the word count available and would distract from the main messages of the paper without adding much of substance.

Changes made: The changes made in response to point 1 above provide readers with a way to compare workforce size and ratios with those of other countries if they wish.

3 The only country the authors reported to have a reasonable number of Paediatric nurses is South Africa at 3200. It would be helpful to compare the ratio of South African paediatric nurses to those in comparable countries such as Australia and New Zealand to assess if South Africa is meeting up with the expected standard or lagging behind. And the potential future needs for Paediatric nurses in South Africa

We think it is problematic to invite a direct comparison between South Africa’s health systems and the very different and much more highly resourced health economies of Australia or New Zealand. The WHO’s guidelines on setting staffing norms advise against adopting ‘ideal’ standards based on unrealistic comparisons with differently resourced health systems. We think the most useful way to look at future staffing needs is in relation to staffing levels and patterns of demand for care in paediatric wards and health facilities (as the reviewer suggests above, suggestion 2), specific to African health systems, which is an area for further research.

Changes made as described under 1 above:

Table two: We have added information to Table two to show percentage of nurses on the national register are children’s nurses, and used the percentage of children’s nurses on the
English Nursing and Midwifery Council register as a point of comparison in the text (page 7 line 43).

Reviewer 2

1 Please limit the whole study to South Africa since not much information was got from other countries for a number of limitations that you may have not reported. It would be a misrepresentation of the situation in other countries which am sure have this information if the method to collect it was thorough.

The aim of this paper is to report on an initial data gathering exercise which represents the first time that data about the size of the children’s nursing workforce and associated training activity have been obtained for these five countries. While admittedly limited, for the reasons stated in the paper, we believe there is value in making these data publicly available in relation to all five countries and not only South Africa. We have previously invited critical comment on the paper from individuals in WHO’s Health Workforce Department, as well as advisers on HRH to national ministries of some of the countries studied, and senior advisers to large global health NPOs. These individuals have said that both the data presented and the limitations and gaps identified are instructive and have encouraged us to seek publication of the results for all countries.

2 When you look at the methodology, how the data was collected isn’t clear. It looks like you asked your respondents to go through their records and provide you with statistics of the workforce capacity in their countries. This is classical document review of secondary data. Most of this countries have Health Monitoring Information Systems (HMIS) which have this data and the just mere asking respondents to provide summary statistics maybe very misleading and may not be accurate.

Thank you for highlighting the need to explain our methodology more clearly. The design of the study is a deliberate response to current local data capacity. We agree that this needs to be explained more clearly.

Certainly, in an ideal world, health management information systems would already be capable of monitoring the children’s nursing workforce in these countries. However, the reality is that children’s nurses in Africa are largely invisible to health information systems at the moment.
Current data capabilities mean that most systems, including National Health Workforce Accounts, treat the nursing workforce as a single category. Indeed, our paper states that: “country-level HRH information systems continue to consider the nursing workforce as comprising generalists, with little apparent consideration of specialisation” (page 14 line 23). This situation has been described to us by individuals with detailed knowledge of their national health information systems through our ongoing dialogue with stakeholders. This prior knowledge informed the approach to data collection, which aimed to collect information from three categories of respondent. This is the reason why expert elicitation (not documentary review of secondary data) was chosen as the main data collection method.

This limited study isn’t able to solve the problem of a lack of health information system capacity. We hope that showing that there is now a discernible and growing children’s nursing workforce in these countries will highlight the need for improvements to health information systems in future. Children’s nursing training has been introduced very recently in three of the five countries studied, which explains why information systems lag behind.

Change made: We have altered the manuscript to refer specifically to the lack of systems to monitor the children’s nursing workforce within health information systems, explaining why we based our design on this assumption (page 4 lines 1-24). The section now reads as follows (additions in bold):

“Documentary review revealed that very little information about the extent of the children’s nursing workforce in these countries was in the public domain. South Africa was the only country for which information relating to the numbers of children’s nurses on the national nursing register was available through published information. Current data capabilities mean that most health information systems in the countries studied, including National Health Workforce Accounts, treat the nursing workforce as a single category. This prior knowledge informed the approach to data collection. Expert elicitation sampling [13] was used, focusing on respondent characteristics that conferred a high level of familiarity with the children's nursing workforce, and/or access to records and relevant information…

Expert sampling is recommended as an approach in situations where there is a lack of empirical knowledge, and where uncertainty may be high [13]. The use of expert sampling was justified in the case of this investigation because of the objectively small size of the children's nursing workforce in these countries and the lack of existing empirical data.”
We have added a recommendation as follows. Abstract (page 1 line 53): “It is hoped that these data can help to inform discussion about what would represent a viable and sustainable regional children’s nursing workforce for the future, as well as demonstrating the potential value of strengthening health information systems to accurately reflect the extent of the specialist children’s nursing workforce.”

This reinforces the point made in the main body of the manuscript:

Conclusion (page 15 line 45): The findings of this initial attempt to provide an estimation of the extent of the children’s nursing workforce in five selected African countries suggest that further action is needed to achieve a more finely-grained understanding of the state of the specialist children’s nursing workforce, so that this growing population of children’s nurses can be developed and utilised to best effect within Africa’s health systems.

3 To make this a paper interesting, I would like to see thorough audit of the workforce situation (quantitative) and why it appears this way (qualitative) and these should be clearly linked (as you say convergent).

I would have loved to whether the numbers commensurate to the policy requirements.

I would have loved to see the distribution of these numbers just in South Africa alone.

In conclusion, if this study was limited to South Africa, you would have more accurate information which more in-depth analysis.

Thank you for these suggestions, which reinforce the suggestions already made above. We have responded in detail already above but in summary:

- We agree it would be useful to give readers a way to compare the workforce numbers with policy requirements. Please see our response to the suggestion made by Reviewer 1 (point 2) above.

- We feel that there is value in presenting the data relating to all five countries (even though it is limited), rather than restricting presentation of data to South Africa, for the reasons explained above (see Reviewer 2, point 1).
- We agree it would be interesting to be able to provide a thorough audit of the workforce situation (quantitative) and why it appears this way (qualitative). While this was beyond the scope of this study we think it is an important area for further research in future.