Reviewer's report

Title: Measuring inequalities in the distribution of health workers: the case of Tanzania

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Reviewer: Monique Van Dormael

Reviewer's report:

The authors argue that current measures of inequality in the distribution of health workers, based on per capita population levels, can be refined by taking into account other indicators of health care needs, such as HIV prevalence and under-five deaths. Applying their method to Tanzania, they use the Lorenz curve and the Gini index to characterise inequality in distribution of health workers per capita, as well as concentration curves drawn in the same diagram to illustrate that needs for health workers differ when considering not only population numbers but also health indicators.

As I am not familiar with the economic measurement tools used, I do not feel competent to comment about the proposed methodology. This may also have hampered my understanding of the paper and limits the relevance of my review, as this is a predominantly methodological paper. From an implementation perspective however, I found the paper not very convincing, for two main reasons:

• Relying on two health indicators (HIV prevalence and under five deaths) is a limited approach to health needs: this is acknowledged by the authors who suggest that other health needs should be taken in consideration to build more comprehensive measures of health care needs.

• As long as solutions to allocate and stabilise skilled health workers in underserved areas are not implemented effectively, refining the measures of health worker needs does not appear as a high priority.

Major compulsory revisions

1. As far as other reviewers appreciate the relevance of the methodology proposed by the authors, I suggest to revise the paper, emphasising even more its methodological innovation dimension, and presenting it as a first attempt to refine measures of inequity by starting with two indicators. Also acknowledge from the start (and not only in the discussion) that more comprehensive indicators are needed.

2. Indicate that implementation in a given country makes sense only if effective policy measures are likely to be taken to reduce unequal distribution: in that case methodology could contribute to improved policy.

3. Explain how and why the two indicators (HIV and under 5 deaths) were
selected rather than others.

4. Start the discussion with the methodological limitations; in particular, discuss more in detail the reliability of the data used, the likely biases, and the possible effects on the results.

Minor essential revisions

1. In section 1, & 3: need for services may vary with factors other than morbidity. For instance, in zones with scattered and low density population, more staff is needed per capita than in high density areas in order to ensure geographical accessibility.

2. page 4 & 1 and page 6 & 1 and 2: crude death rates in industrialised countries reflect retiring population who have high needs. In developing countries, crude death rates do not reflect a retiring population. However, justifying that needs of the elderly are not a proxy for general health needs because a country has no resources set aside for the ageing population is erroneous. One of the future challenges in many developing countries will be the demographic and epidemiological transition, with growing needs in terms of chronic conditions and care for the elderly.

3. Clarify the criteria used to differentiate urban and rural districts

**Level of interest:** An article of limited interest

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests