Reviewer's report

Title: The public sector nursing workforce in Kenya - a county level analysis

Version: 2 Date: 12 September 2013

Reviewer: Thomas Ricketts

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Comments on Wakeba et al. HRH

Major Compulsory Revisions

The article needs to relate more closely to actual policy decision in Kenya. How and why the counties were created and it needs to include facilities data. The references and tabular material need to be better integrated into the article. I include several comments below

In abstract

Provide date for the “new constitution”.

Text:

The association between health worker density and mortality reaches a certain inflection where the addition of more workers does not reduce mortality. The association does apply to nations like Kenya but there are other very important characteristics of nations that also affect health outcomes. Explain how this works (minor essential)

(Major essential) To say that “… limited availability of nurses may be exacerbated within countries by geographical mal-distribution” implies that the inequality of distribution is in itself a negative influence. That may or may not be so. To then link that to information needs is a bit of non sequitur…you also need to say that countries at risk for this mal-distribution often do not know what the actual distribution is. The emphasis on a “computerized database system” seems to me to be putting the cart before the horse, there must be a registration system and the mechanisms and regulations in place to do that before those data can be computerized. Having these data “maintained” is a good thing, but the system of registration and its accuracy is more important first step. Has this system been assessed for its effectiveness? Is compliance satisfactory? Although the material is described in a previous article, it would be good to review that. Later in the Ms, one gets the impression that the nursing inventory is based on “staffing” lists (page 7). The paper needs to better describe the process for data gathering by outlining the process included in the chart offered as an appendix/table.

Provide more details of the demographic variables available beyond gender. (Minor essential)

(discretionary) The exclusion of the nurses in the two central hospitals doesn’t
make much sense as it changes any denominators. Yes, their responsibility is
different, but they are nurses and they may leave those posts and go elsewhere.
They are reported in the results section.

(major essential) The remoteness index is interesting, but how was the initial
classification done (centres 1-3) and were there any population values assigned
to the “grid pixels”? There needs to be some justification for the geographic
analysis, what was the goal of this assignment of “remoteness” and does it follow
any standard for this kind of work? I still do not get a sense of how it was
calculated and whether it was anything beyond a measure of size of the counties.
You may want to correlate the size with this index to see if it does have a
different meaning. The references to the work of Noor et al. indicate that there is
a more useful description of this work elsewhere and the article would be
improved if there were more description of this process/method.

(minor essential) The “health spending per capita” explanation is not clear. That
seems to be a mix of measures. How was this calculated?

(minor essential) The justification for the analysis of supply in the counties is
adequate, but a little more detail about the devolution of power to those counties
would be good to read. Will they have any role in the licensing or registration?
Will they control payments?

(Minor essential) The opening paragraph of the Methods section is awkwardly
written and reveals a large hole in the inventory of nurses in the failure to report
by “non-public” professionals. What does “concern” mean? Does the analysis
include them?

This description of the public sector component of the workforce gets to the
accuracy question, how many nurses is this likely to exclude? The statement that
the public sector includes perhaps 50% of professionals means there are a very
large number of people not counted in this system. (Discretionary)

The standard of 2.5 per 1,000 may or may not apply to Kenya. Is this a
“minimum” or is it something closer to an optimum. The 2.5 standard also include
doctors, why are they excluded when you do any comparisons?
(discretionary—may use references to justify)

(Major essential) The conclusion makes a point with the 15-fold variation across
counties. That is useful, but here is where we need to know something about the
formation of the county boundaries. Were they meant to regionalize and/or
centralize general public services or were they to trace ethnic or traditional
boundaries or did they represent transportation networks. In short, were they
meant to be in any way relevant to the distribution of health care resources? The
lack of correlation with “outcome” variables hints that these areas were
constructed to diminish variance in some measures.

The discussion covers many issues and suggests many “explanations” for
variances in nursing distribution and characteristics. But the distributions are hard
to interpret beyond suppositions without some understanding of the construction
Comment and I encourage this to be considered more deeply) I hope that the inventory is a “reasonable representation of the current situation” (p. 14) but have the suspicion that there is a very sizeable number of nurses who are left out and who may cluster or distribute themselves in meaningful ways.

(Minor essential) Table 1 and all tables using the number of counties as the N, need to state the number of counties.

It would be good to have a geographer review this approach--I see there are people in the authors list with these skills, but the spatial method is very poorly described in the text.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Needs some language corrections before being published

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

**Declaration of competing interests:**

I have no competing interests.