Reviewer's report

Title: Myanmar mortality registration: an assessment for system improvement

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Reviewer: Tim Adair

Reviewer's report:

Assessment of the quality of vital statistics produced by the Myanmar CRVS system is a topic of interest given the paucity of reliable mortality data in this country. However I have strong reservations about the approach employed by the authors to measure the completeness of death registration in Myanmar, and their interpretation of subnational mortality results. Given that measurement of the completeness of death registration is the primary finding in this paper, the recommendation is to not accept the paper for publication.

The use of the Brass Growth Balance method to estimate completeness of death registration is not appropriate for Myanmar. As noted by the authors, the method is reliant upon there being a stable population (i.e. constant population growth rates). However, in Myanmar the rate of population growth has fallen substantially in recent decades, from 2.22%pa in 1980-85 to 0.82%pa in 2010-15. This clearly will introduce biases into the resultant completeness estimate. Other estimates by both the United Nations and Global Burden of Disease for Myanmar are of approximately 400,000 deaths per annum, suggesting completeness of death registration of approximately 50%. These approaches, which utilise available mortality estimates from censuses and surveys and model life tables are more reliable than those produced by an inappropriate method such as the Brass Growth Balance method. While it is recognised that the lack of recent censuses prevents application of the more reliable intercensal methods (e.g. Generalised Growth Balance method, Bennett-Horiuchi method), this does not validate use of the Brass Growth Balance method.

Specific comments:

p4 - The vital registration system is not the only source of mortality statistics in Myanmar - there are the DHS and census that produce child mortality estimates.

p5 - Why use 2014 Census population with 2013 registred deaths? Consistent time periods for both numerator and denominator should be utilised.
p6 - Brass Growth Balance is one of a number of death distribution methods, not the only death distribution method.

p7 - The 2014 census publication also appeared to use Brass Growth Balance, so their CDR estimate is flawed.

p7 - WHO and UN estimates were mentioned by the authors, however the estimate from the Brass Growth Balance method appears to have been taken as the more reliable.

p8 - It is mentioned that rural areas should have higher CDR than urban areas, however this is a generalisation. Overall, they should have higher age-specific death rates however the crude death rate can be lower if rural areas have a much younger age structure. Table 1 should compare age-standardised death rates between states and regions, which would provide a better indication of the extent of under-registration at the sub-national level.

p10 - Comparison should also be made to the Global Burden of Disease estimates for Myanmar, rather than those for the SEA region which includes countries with a wide range of mortality rates.

Table 3 - should mention that it excludes ill-defined causes.

p14 - The paper could expand further on why death registration is higher for males than females.

p15 - This section could expand on how verbal autopsy could be rolled out for use in producing reliable cause of death statistics in Myanmar.

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