Reviewer’s report

Title: Next wave of interventions to reduce under-five mortality in Rwanda: A cross-sectional analysis of Demographic and Health Survey data

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Reviewer: G. Anil Kumar

Reviewer’s report:

This paper tried to identify areas for potential further intervention by evaluating socio-demographic and health factors associated with U5 mortality in the 2010 Rwanda Demographic and Health Survey (RDHS). However, it needs to be much improved before it can be accepted for publication.

Abstract

It is mentioned in the abstract that "This is a cross-sectional study of 9002 births to women age 15-49 in the 2010 Rwanda Demographic and Health Survey", however in the methods section described that "this analysis is based on data collected from 6328 women age 15 to 49 in the 2010 RDHS and who had a child in the last five years". Is this means 9002 births was reported by 6328 women age 15-49 in the 2010 Rwanda Demographic and Health Survey?

In abstract, it is written that "Although Rwanda achieved an estimated 70% decrease in the national under U5 mortality rate between 2000 and 2011…………………………." While comparing DHS data for Rwanda, the estimated decrease in the national U5 mortality rate between 2000 and 2010 is 60%. What is the data source for U5 mortality rate for Rwanda in 2011? Is this source Unicef report?

Background

There is an estimated 70% decrease in the national U5 mortality rate between 2000 and 2011 in Rwanda. This data was taken from reference 2, Figure 2. While examining the figure, there was a steep increase in U5 mortality rate in Rwanda from 1990 to 1995 and then a steep declined trend. Did the authors examine the reason for this increase and decline? The reason for this increase in U5 mortality between 1990 and 1995 and decline trend between 2000 to 2001 could be highlight in the background section.

Page 3-4, line no 71-82. It is better to include one or two sentences about How did these interventions helped to reduce the under 5 mortality in Rwanda.
The objective of the paper is mentioned in page 4 line 86-88 as "This article aims to identify areas for potential further intervention by evaluating socio-demographic and health factors associated with U5 mortality in the 2010 Rwanda Demographic and Health Survey (RDHS)". The data on under 5 deaths was collected for the previous 5-year period (2005/2006-2010/2011). The authors examined the factors which was correlated with under 5 deaths during 2005/06-2010/11 and suggesting the potential further interventions to reduce the U5 mortality. Is my understanding correct?

Method

Overall methods section seems to be very brief, I think more explanation needed.

Page 6 line No 128, it is stated that "While one man was interviewed in one half of households, they were not necessarily the father of ………………(father education and mother education are highly correlated)". What do the authors tried to explain here? I think authors can report that, since the all fathers' information is not available as per the survey design, this analysis did not include father's data.

An article from Liu et al. 2012 reported while in 2000 an estimated 22% of under-five deaths occurred in the first 28 days of life, by 2010 that percentage had increased to 34%. However, authors pointed out that "We did not model risk factors for neonatal mortality because too few pregnancy and delivery variables were available and too few observations were available to make the analysis meaningful". Also Rwanda HMIS, 2014 (Hospitalization and mortality) reported that 70% of under 5 deaths are due to Neonatal illnesses. As per authors most of the reported under 5 deaths were happened >28 days of life. Could you please examine.

I am not clear about the relation of some of the factors/variables considered for the analysis with the outcome. Correlation of some variables are relevant to deaths according the age at deaths. So, I think authors can relook into this.

Results

According to the result section, it is clear that 46% of under 5 deaths occurred in the neonatal period (0-30 days). This is not corroborating with the method section. Please explain what is the actual issue to run a separate model?

What is the distribution of births in each of the previous 5 years?

Discussion

Discussion need to be strengthened further
Table

Table 1 The last category of the variable "Number of antenatal visits during pregnancy" is "Not asked". What the authors meant by Not asked. If this means that question not asked, why did the authors include this variable in the model.

How did "Physical or sexual violence by husband against mother, in last 12 months" variable related with under 5 deaths. This may be related with 0-11 months' infant deaths. Also, this information is available for only a subset of the data. Why did authors use this variable in the model? More than 50% data was not available for this variable.

As per the table 1, Number of births in last 5 years is maximum in 1-2 births. According to the WHO report for Rwanda, total fertility rate (2013) is 4.5. Can the authors check their data for total fertility rate.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
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I am able to assess the statistics

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