Reviewer’s report

Title: Factors influencing place of delivery for women in Kenya: an analysis of the Kenya Demographic and Health Survey, 2008/2009

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Reviewer: Alex Ezeh

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This paper uses data from the 2008/2009 Kenya Demographic and Health Survey and the 2008 Kenya Health Facility database to assess the factors associated with facility delivery in Kenya. The authors noted that poor maternal health outcome in Kenya which has shown an upward trend since the 1990s and linked this to continuing low levels of facility deliveries in the country. The main additional contribution of the paper to existing literature on maternal care is the inclusion of GPS links to nearest health facility – although it is not clear that the way this variable was measured improves our understanding of how physical access constrains use of health facilities for delivery. The key factors identified in the study as important predictors of health facility deliveries are not different from what has been observed in other studies in Kenya and most of sub-Saharan Africa.

There are a number of the points the authors need to revisit in trying to revise the paper. In the “Study population” section, the authors indicated that the KDHS “involved randomly selected households across Kenya and all women aged 15-49 years in each household and all men aged 15-49 in every second household selected were interviewed …” This is poor and inaccurate description of the sampling strategy for the 2008/09 KDHS.

Under “Statistical methods”, the authors’ use of the word “univariate associations” is inaccurate as univariate analysis simply refers to basic description of a single variable (frequency distribution of single variables) as shown in their Table 1. This error is carried throughout the paper. At the bottom of page 4, the authors noted “In univariate analysis, all explanatory variables were significant predictors of place of delivery …” Also, the authors should have used simple Pearson’s Correlation matrix across all variables to identify which variables may be highly correlated rather than simply checking on a few to assess collinearity. For instance, one would expect higher collinearity between ethnic group and region than between ethnic group and religion. Looking at the latter could not help one identify the former.

Some of the numbers in Table 1 do not make sense. For instance, their numbers show there were 2,983 (73.2%) in urban areas versus 1,091 (26.8) births in rural areas. This is highly improbable for a country like Kenya where only 25% of the women in the 2008/09 KDHS lived in urban areas. Even if one assumes there was a typographical mistake with urban being mis-labeled rural, the numbers
also do not match. In the KDHS report, there were only 1,074 births in urban areas in the 5-year period preceding the 2008/09 survey. So it is not possible to have more births in urban areas when one selects only one birth per woman. Several of the variables also have this problem. With respect to birth order, 1st delivery is reported as 887 compared to 1,310 in the report and one would not expect much change in this particular indicator. This raises questions as whether the univariate and bivariate analyses in tables 1 and 2 respectively used weighted or unweighted numbers.

The definition of the variables may also be very problematic. For instance, the relationship between wealth quintile and place of residence may simply result from the wrong application of the wealth quintile variable in the KDHS dataset uniformly to urban and rural areas. Not only does this distort poverty measures in urban and rural areas, but it also affects comparisons across the quintiles. Very few rural households appear in the higher quintile brackets and very few urban households appear in the lower quintile brackets. It is much better to use the same indicators in the variables to reconstruct such variables separately for urban and rural areas. This also applies to the measure of distance. The household GPS data used displaced household coordinates differentially between urban, rural, and sparsely populated areas of Kenya to maintain confidentiality of the respondents. However, the analysis used the same cut-off for all women irrespective of their place of residence. Not only will such a measure be highly correlated with place of residence, but it is unclear the differential displacement of household coordinates affects the observed association between distance to a health facility and use of health facility for delivery.

Some of the conclusions may also require re-visiting. It is unclear what is meant by “Since misclassification of distance is likely to be non-differential with respect to place of delivery, we expect the effect to be a reduced strength of effect of distance”. The inference that the effect of education may result from the subjective valuation of the importance of health facility delivery among women with secondary or higher education led the authors to recommend targeting “women with low formal education with health education around pregnancy and childbirth” so as to “improve their knowledge, perception and valuation of health facility delivery …” The KDHS report suggests that for half of women with no formal education, lack of transport and facility being too far is their main reason for not delivering in a health facility. The reporting of health facility delivering not necessary (which is one response category that can be addressed through education programs) did not vary by educational status.