Reviewer’s report

Title: Barriers to immunization and the design of research-based communication strategies in Colombia

Version: 2 Date: 12 March 2014

Reviewer: Stella Muthuri

Reviewer’s report:

This study examined immunisation barriers among parents and guardians of children less than 5 years of age in Colombia using data collected from a nationwide cross-sectional survey. The results show that the most common barriers to immunisation were factors related to caregivers, vaccinators and health centres. Other inhibiting factors include concerns about adverse events, and religious and cultural beliefs. The authors conclude that communication strategies addressing these barriers would increase vaccination coverage rates.

Major Compulsory Revisions

This is an important study making valuable contribution to public health. However, authors could provide more clarity in the abstract and the methods section of the manuscript. For example, authors mention in the abstract that they conducted ‘factor, multivariate, and cluster analysis’ while in the methods it becomes apparent that various multivariate techniques were used including factor, principle components and cluster analysis. Perhaps they could briefly explain how each technique was used. For instance factor analysis was used to reduce the number of variables on immunisation barriers; principle component analysis was used to derive groups of caregivers with similar response on….etc.

The methods section of the main manuscript could also benefit from additional information on each multivariate technique and why it was used. For example, why was the principle component analysis used and how did the authors decide the number of components to retain? Was the decision based on eigenvalues? If so what criterion was used to identify the six heterogeneous groups?

As for factor analysis, was this exploratory or confirmatory and how did the authors determine which of the 25 questions correlated with immunisation barriers? etc

Moreover, why were three methods (factor, principle components, cluster analysis) used instead of say, one or two? – this is not clear to the reader.

Also on page 9: authors state that they did not conduct statistical analysis which is contradictory as they performed factor, principle components and cluster analysis. Perhaps they meant to imply that they did not apply classical statistical methods like multiple regression analysis but performed descriptive analysis and present absolute and relative frequency.

Minor editing comments:
- Do you mean Table 1 (page 10) is Figure 1 ‘Characteristics of interviewed persons…’
- Do you mean the total number of participants with at least one child with an incomplete vaccination schedule was 3344 and not (n=3444) as shown by Table 2
- Discussion, page 16 para 1 : do you mean quality of the NIP or EPI

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests