Reviewer’s report

Title: Social determinants of pulmonary tuberculosis in Brazil: an ecological study.

Version: 0 Date: 27 Aug 2018

Reviewer: Ricardo Arcêncio

Reviewer's report:

Many thanks for invitation to review the manuscript. Although the study is relevant to the Brazilian context, I am not sure about its originality. I preferred to write my comments according each subsection of the manuscript.

Introduction:

The authors have stated there are missing studies in terms of Brazil, we are not sure about that, once I identified other studies with similar objective (Just read (HARLING; CASTRO, 2014; PELISSARI; DIAZ-QUIJANO, 2017); This theme has already been widely explored in the literature then I recommend to the authors for reviewing the literature and present the real knowledge gap (what does the study different from much others which have published about this subject in Brazil?). I was not able to identify the originality of the study, just procedure/conduct a systematic review to support your statements. I would recommend to authors to review the manuscript's title, ecologic study sounds not so "attractive" to the readers.

Regarding to the objectives of the study which aims to evaluate the correlation between social indices and TB incidence rate, cure, default, relapse and mortality in Brazil; it would be interesting that authors could also to evaluate "spatial dependence" of this events through appropriate methodologies or more robust (Global Moran's I and Getis-Ord Gi* statistics* are an interesting resources and few studies have applied that(IZUMI et al., 2015), or even Geographically Weighted Regression -GWR - Some examples: (WEI et al., 2016; WUBULI et al., 2015)). I believe that only checking the correlation between the variables by the Spearman correlation coefficient is much simple for a study in the BMC Pul Medicine). The authors have brought in their results important classification of the cities by region and size (population size), maybe this could get clearer in the objectives.

Methods:

Provide more details about the variables selected, why have the authors considered only data from 2010. Once the authors proposed to evaluate the relation between social variable obtained
from the Brazilian Census 2010 and those collected through DATASUS, it would be more coherent/plausible that the last were earlier, in a perspective more longitudinally-"cause and effect". Whether social determinants for occurrence TB cases, deaths, and abandonment in 2010 it would be better to test them with social variable older. This issue did not make sense to me.

A figure with all variable considered to the study could be help the readers understand the manuscript. It is not clear what the authors meant with "population analysis", maybe it could get clearer with my previous suggestion. Consider the STROBE to rephrase the "methods". The readers cannot understand in terms of its reliability (which is extremely relevant to BMC P M). The statistically analysis is really simple according my comments previous, consider the possibility to introduce new analysis (more robust).

Results: So far, it sounds more as an essentially descriptive study, without innovation. Consider my comments about including new analysis, becoming the study more attractive to the readers.

Discussion:

Organize this sub-section based on Strobe. In terms of limitation, remove the line "the results cannot be inferred at individual level", for sure that not once the authors have proposed an ecological study, it is obvious, just mention limitation strictly related to the carrying out of the study.

I disagreed when the authors stated "Regardless these limitations, the analysis of variation of risk at the ecological level is fundamental for understanding the social …" the authors did not investigate "clustering/ variation of risk" as well they did not use appropriate methodology for that. They only used Spearman to check "correlation".

The authors have to expand the discussion addressing to the "End TB strategy" as well to the main findings considering the "The Millennium Development Goals" and the 2030 Agenda for Sustainable Development - https://sustainabledevelopment.un.org/post2015/transformingourworld. Just pay attention in a Target/ goal number 1 and 11 and others related to the mains findings of the study.

Suggested references and mentioned previously:

HARLING, G.; CASTRO, M. C. A spatial analysis of social and economic determinants of tuberculosis in {Brazil}. Health Place, v. 25, p. 56-67, 2014.


**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.

No

**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?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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Please indicate the quality of language in the manuscript:

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