Reviewer's report

Title: Atrial fibrillation hospitalization is associated with exposure to fine particulate air pollutants

Version: 0 Date: 09 Apr 2019

Reviewer: Matteo Renzi

Reviewer's report:

The paper "Atrial fibrillation hospitalization is associated with exposure to fine particulate air pollutants" evaluates the role of the PM2.5 short-term exposure on the incidence of atrial fibrillation in Taiwan from 2006 to 2011. The authors used the time-stratified case-crossover approach to assess this association. They applied conditional logistic regression models and evaluated a possible effect modification for pre-existing health comorbidities. Atrial fibrillation is one of the most common cardiovascular diseases in the world and only few studies report the association with air pollution exposures. The study is well written and conducted, but it requires a language editing to my advice. Some sensitivity analyses might be conducted to give more strength to the paper. Below, I report my suggestions:

Suggestions:

1) Time-windows: the authors evaluated the short-term effect of PM2.5 on hospitalization for Atrial fibrillation only at lag0 and lag1. Could be of interest explore some other time-window exposures to investigate the short-term effects of PM2.5. For example, the authors might include single lags from 0 to 5 days before and cumulative lags such as lag 01 and lag 05.

2) Dose-response analysis: An important issue raised in the recent years is the shape of the relationship between air pollution and health outcome. Adding a dose-response analysis (the authors could run DLNM analysis for example) to explore the exp-resp function could increase the strength of the paper.

Comments:

1) Line 137-144. The authors report each Spearman coefficient between the pollutants considered in the text. They should avoid this, report only the most important results, and refer to the Table for the other coefficients. This choice could enhance the readability of the Results.

2) Please expand the statistical analysis, describing how the authors evaluate the effect modification by individual characteristics.

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