Review of: "Human health effects of volcanic eruptions – a systematic review"

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Potential competing interests: No potential competing interests to declare.

The topic of this paper is timely and interesting, especially because of the possible interaction with climate changes. However, the paper is descriptive, and lists the papers and the most common health effects, both in the short- and long - term. The information presented is so generic that it could be found in a newspaper article. Instead, any research should be based on quantitative analysis. The results on respiratory, cardiovascular and psychological effects of a volcanic eruption are somehow expected, whereas the effects on cancer incidence are less obvious and more difficult to demonstrate.

I would have expected some quantitative analysis in samples of subjects exposed, defined as number of subjects, mean age, number and type of diseases known before the eruption, and a comparison between incidence rate of diseases before and after the eruption. These data are probably reported in the papers, but are not mentioned in the review. In addition, it would be interesting to know whether subjects in different age ranges were examined, i.e. children, adults and elderly, since some age groups might be more susceptible than others to the deleterious effects of volcanic eruptions.

The severity of volcanic eruption is another crucial piece of information which is currently missing. I have no idea about how it could be measured, but guess that duration in days or months of the eruption might be a good proxy for that. I would expect small eruptions, or baseline activity of some active volcanoes, to be very different from the catastrophic eruptions lasting many days or months with a high destructive power and high volume of emissions.

Providing such information in the paper could highlight possibly different rates of health effects according to the type of volcano examined and the severity of the eruption, based on its duration and the composition of the particles emitted during the eruption. Moreover, does the description of the types of volcanoes have an impact of health effects caused by the eruption? In other words, are health effects predictable according to the type of volcano, so that the data obtained for one volcano might apply to other events from similar volcanoes?

In longitudinal studies, duration of follow-up is essential. Are some effects of eruptions already present acutely and persisting in the long term, or are some effects developing over time? I think about cancer, obviously, which being a multifactorial disease may require large number of subjects followed for a long time to reliably show an effect.

There are a few unclear terms: for example volcanic vog, what is it? Also, I do not catch the difference between transversal and cross-sectional studies, please explain.

My suggestion is the paper should undergo a major revision, with reshape of the big table, taking out the unnecessary information (like the country were the volcano is located) and adding relevant and quantitative information. The discussion should critically review the data shown in results (see suggestions above).