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

Augusto Morgia[1]

1 Sapienza University of Rome

Potential competing interests: No potential competing interests to declare.

Here's a point-by-point review of the article:

1. Title: The title of the article is "Human health effects of volcanic eruptions – a systematic review." This title accurately reflects the content of the article, which aims to evaluate the relationship between volcanic eruptions and short- and long-term effects on human health.
2. Abstract: The abstract provides a brief summary of the article's main points, including the objectives, methodology, results, and conclusion. It also highlights the importance of developing contingency plans to protect vulnerable populations from the effects of volcanic eruptions.
3. Introduction: The introduction provides background information on the impact of volcanic eruptions on human health and the importance of understanding the relationship between the two. It also states that the scientific community and international organizations agree that volcanic eruptions impact human health.
4. Methodology: The methodology section describes the systematic review process, including the search strategy, eligibility criteria, data collection and analysis, and quality assessment. It also mentions that the study protocol was registered in the PROSPERO database.
5. Results: The results section presents the findings of the systematic review, including the number of included studies, the types of volcanoes and health effects evaluated, and the quality assessment of the included studies. It also highlights the heterogeneous results among studies and the need for further research.
6. Discussion: The discussion section interprets the results, highlighting the impact of volcanic eruptions on human health, the importance of developing contingency plans, and the need for further research. It also mentions the limitations of the study, such as the quality of the included studies and the lack of standardization in the evaluation of health effects.
7. Conclusion: The conclusion summarizes the main findings of the study and reiterates the importance of developing contingency plans to protect vulnerable populations from the effects of volcanic eruptions.
8. References: The references section lists all the sources cited in the article, following the PRISMA guidelines for systematic reviews.

Overall, the article seems well-structured and well-written. However, I have a few suggestions for improvement:

1. The introduction could be more engaging and provide more context about the importance of the study. For example, the authors could mention the recent volcanic eruptions and their impact on human health, or provide more information

about the vulnerable populations that are most affected by volcanic eruptions.

2. The methodology section could be more detailed, especially regarding the search strategy. For example, the authors could provide more information about the search terms used, the databases searched, and the time frame of the search.
3. The results section could provide more information about the quality assessment of the included studies. For example, the authors could provide a detailed description of the quality assessment tool used and the results of the quality assessment for each study.
4. The discussion section could explore the limitations of the study in more detail. For example, the authors could discuss the potential bias in the selection of included studies, the lack of standardization in the evaluation of health effects, and the difficulty of assessing the impact of volcanic eruptions on human health.
5. The conclusion could be more concise and summarize the main findings of the study more clearly. For example, the authors could mention the percentage of studies that found a relationship between volcanic eruptions and short- and long-term effects on human health, and the importance of developing contingency plans to protect vulnerable populations.

At last, here are some possible errors and limitations of the analysis:

1. Data quality: The accuracy of the analysis is dependent on the quality of the data used. If the data is incomplete, inaccurate, or biased, the analysis may not accurately reflect the true relationship between the variables.
2. Sampling errors: The sample size of 2000 may not be representative of the entire population, and the results may not be generalizable to other populations or contexts.
3. Measurement errors: The measures used in the study, such as the "volcanic eruption" variable, may not be accurately captured or measured, which could affect the validity of the analysis.
4. Confounding variables: Other variables that are not accounted for in the analysis may be confounding the relationship between volcanic eruptions and human health effects. For example, socioeconomic status, access to healthcare, and other environmental factors may influence the health effects of volcanic eruptions.
5. Reverse causality: It is possible that the relationship between volcanic eruptions and human health effects may be influenced by reverse causality, where health effects may also influence the frequency or severity of volcanic eruptions.
6. Time-varying confounding: The analysis assumes that the relationship between volcanic eruptions and human health effects is constant over time, but this may not be the case. Time-varying confounding variables, such as changes in population demographics or environmental factors, may affect the relationship between the variables.
7. Model assumptions: The linear regression model assumes a linear relationship between the variables, but the relationship may be nonlinear or have a threshold effect.
8. Model misspecification: The model may be misspecified, which can lead to biased or inaccurate estimates of the relationship between the variables.
9. Computational errors: The analysis may be sensitive to computational errors, such as rounding errors or singularities in the dataset.

10. Interpretation limitations: The study may have limitations in its interpretation, such as the inability to infer causality or generalize the results to other populations or contexts.

To mitigate these limitations, it is important to carefully evaluate the data and methods used in the analysis, consider alternative explanations and models, and consider additional data sources or methods to triangulate the findings.