

PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

This paper was submitted to a another journal from BMJ but declined for publication following peer review. The authors addressed the reviewers' comments and submitted the revised paper to BMJ Open. The paper was subsequently accepted for publication at BMJ Open.

ARTICLE DETAILS

TITLE (PROVISIONAL)	What has happened to suicides during the Greek economic crisis? Findings from an ecological study of suicides and their determinants (2003-2012).
AUTHORS	Rachiotis, George; Stuckler, David; McKee, Martin; Hadjichristodoulou, Christos S

VERSION 1 - REVIEW

REVIEWER	Bjørngaard, Johan Håkon Norwegian University of Science and Technology, Public Health and General Practice
REVIEW RETURNED	17-Nov-2014

GENERAL COMMENTS	<p>In the present study the authors seek to investigate suicide mortality in Greece related to the recent economic crisis. This is a very interesting topic with high public health relevance. Following comments are made:</p> <ol style="list-style-type: none"> 1. The Method section needs to be elaborated. What suicide codes were used? What about undetermined intend? And what is evidence of validity and reliability of the Greece suicide data? I would also have appreciated a statistical section presenting more thoroughly how the statistics were performed. 2. Also, how was data for unemployment measured? Is this based on registry information? 3. It would be informative to see actual numbers of suicides each year. 4. Figure 1 shows a large variability during the period. Also, it is not obvious that the change is related to the crisis in 2010. 5. A crude ecological correlation between unemployment rates and suicide rates is not convincing evidence of a causal association. If the suicide rates have gone up related to the economic crisis, other factors could also be equally important (debt, downsizing of health services etc...) 6. There are a lot of possible limitations related to the presented empirical evidence, but these are not stated at all. The results are based on ecological data. The validity of the suicide mortality data is not discussed. Could for example suicide mortality codes be more likely to be used in stead of undetermined intend after the crisis?
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- This manuscript received two reviews from its previous Journal. However, the other referee had declined to make his comments public.

VERSION 1 – AUTHOR RESPONSE

Comments to the Author

In the present study the authors seek to investigate suicide mortality in Greece related to the recent economic crisis. This is a very interesting topic with high public health relevance. Following comments are made:

1. The Method section needs to be elaborated. What suicide codes were used?

(page 6, lines 8-9) .

What about undetermined intent? And what is evidence of validity and reliability of the Greece suicide data?

We have now listed the codes (suicide or self-inflicted injury or poisoning (ICD-9 E950-958). Thus, we did not include deaths of undetermined intent. As we note above, an earlier study showed that Greek data meet a quality threshold based on the ratio of suicides to deaths of undetermined cause.

Nonetheless, and again as noted above, we recognize that there may be some problems with data, as is the case almost everywhere, and note this in the discussion.

I would also have appreciated a statistical section presenting more thoroughly how the statistics were performed.

We employ widely used statistical tests. However, we have added some words in various places to elaborate them. We have also added a sentence on the regression discontinuity (page 7, lines 6-8).

2. Also, how was data for unemployment measured? Is this based on registry information?

We have added a detailed description of the unemployment data (page 6, line 17 onwards).

3. It would be informative to see actual numbers of suicides each year.

We have added these data in a new table.

4. Figure 1 shows a large variability during the period. Also, it is not obvious that the change is related to the crisis in 2010.

In fact the figure 1 shows a clear increase in suicide rates for the period 2011-2012 compared to the period 2003-2010. This trend is also reflected in the absolute number of suicides (see new table 1, please). For instance, 2010: 377 cases ;2011:477; 2012:508 cases.

5. A crude ecological correlation between unemployment rates and suicide rates is not convincing evidence of a causal association. If the suicide rates have gone up related to the economic crisis, other factors could also be equally important (debt, downsizing of health services etc...)

Of course we can never establish causality simply from an observational study, as was noted by Bradford Hill when he developed his criteria that should be considered, as a whole, to assess the likelihood that an association is causal. We have now restructured a section of the discussion completely to show that the observed association complies with all the criteria that can be tested.

Thus, as we note, it is likely that the association is causal (and certainly there is no evidence to refute this conclusion) but we cannot prove it.

6. There are a lot of possible limitations related to the presented empirical evidence, but these are not stated at all. The results are based on ecological data. The validity of the suicide mortality data is not discussed. Could for example suicide mortality codes be more likely to be used in stead of undetermined intent after the crisis?

We had mentioned some limitations previously but have now brought them together into a new paragraph (page 12, line 6-16).

Correction

Rachiotis G, Stuckler D, McKee M, *et al.* What has happened to suicides during the Greek economic crisis? Findings from an ecological study of suicides and their determinants (2003–2012). *BMJ Open* 2015;**5**:e007295. doi: 10.1136/bmjopen-2014-007295

A funding statement was not included for author David Stuckler. The Funding statement should have included “DS is funded by ERC HRES 313590.”

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