

Peer Review Report

Review Report on Changes in acute myocardial infarction, stroke and heart failure hospitalizations during COVID-19 pandemic in Tuscany –an interrupted time series study.

Original Article, Int J Public Health

Reviewer: Miquel Serra-Burriel

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EVALUATION

Q 1 Please summarize the main findings of the study.

The present study aimed to measure the collateral effects of the COVID-19 pandemic on non-COVID hospitalization rates and outcomes. To do so, they employed an interrupted time series design. The authors find large decreases in hospitalization rates not translating into worse in-hospital outcomes.

Q 2 Please highlight the limitations and strengths.

Strengths:

- Population-based design.
- 2015 to 2019 data availability to control for pre-trends.
- Solid statistical analysis.

Limitations:

- No available natural control group.
- Population-level outcomes such as mortality not included in the analysis.
- Alternative statistical approaches are available to confirm results.

Q 3 Please provide your detailed review report to the authors. The editors prefer to receive your review structured in major and minor comments. Please consider in your review the methods (statistical methods valid and correctly applied (e.g. sample size, choice of test), is the study replicable based on the method description?), results, data interpretation and references. If there are any objective errors, or if the conclusions are not supported, you should detail your concerns.

Major comments:

- Contribution to the field section: I believe this part needs to be toned down. Interrupted time-series designs are not the gold standard of quasi-experimental research. The lack of a natural and credible control groups hinders this claim.
- General design: the authors comment in their inability to disentangle mechanisms, whether lockdown or fear-induced healthcare contact avoidance. However, if available, they could use the population registry with the causes and place of death to dig deeper into the issue. The fact that the study does not include out-of-hospital outcomes precludes for a more thorough assessment.
- I understand that not having access to the mortality register data is a limitation. However, the current contribution to the literature is rather confirmatory, if the authors could gain access to some data and try to disentangle a bit more the mechanism (lockdown vs fear) they could greatly enhance the value of the manuscript. Maybe some out-of-hospital care data could be used for this purpose.
- Methods: apart from using an interrupted time series design, the authors could use a difference-in-differences approach with weekly or monthly lag-lead design to complement and confirm their results. COVID cases could also be controlled for in such a design, to assess the robustness of the results. More specifically,

to assess the validity of 2015–2019 as control periods, and the implicit assumption of parallel trends, the authors could report the lags of the lag-lead dif in dif method for that purpose.

Overall it already is a very good study, but it can be improved if the authors can access further data sources and make some methodological tweaks.

Minor comments:

- Abstract: "The implementation of the pandemic-related lockdown was associated with large decreases in inpatient hospitalization rates ..." The authors themselves argue in the text that it is impossible to disentangle the effects of fear of infection and lockdown, I suggest to modify.

PLEASE COMMENT

Q 4 Is the title appropriate, concise, attractive?

Yes.

Q 5 Are the keywords appropriate?

Yes.

Q 6 Is the English language of sufficient quality?

Yes.

Q 7 Is the quality of the figures and tables satisfactory?

Yes.

Q 8 Does the reference list cover the relevant literature adequately and in an unbiased manner?)

Yes.

QUALITY ASSESSMENT

Q 9 Originality



Q 10 Rigor



Q 11 Significance to the field



Q 12 Interest to a general audience



Q 13 Quality of the writing



Q 14 Overall scientific quality of the study



REVISION LEVEL

Q 15 Please make a recommendation based on your comments:

Major revisions.