

Using the OMOP CDM in the development of a multi-state model of symptomatic COVID-19 in Catalonia, Spain

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INTRO

We set out to describe the associations between age, gender, and comorbidities and the risk of outpatient Coronavirus Disease 2019 (COVID-19) diagnosis, hospitalisation, and/or related mortality.

METHODS

- All individuals registered in Information System for Research in Primary Care (SIDIAP) were included.
- Primary care records were linked to region-wide testing, hospital and mortality records. The linked patient-level data was mapped to the OMOP CDM.
- Outpatient diagnoses of COVID-19, hospitalisations with COVID-19, and deaths with COVID-19 were identified between 1st March and 6th May 2020.
- A multi-state model was used, with cause-specific Cox survival models estimated for each transition.

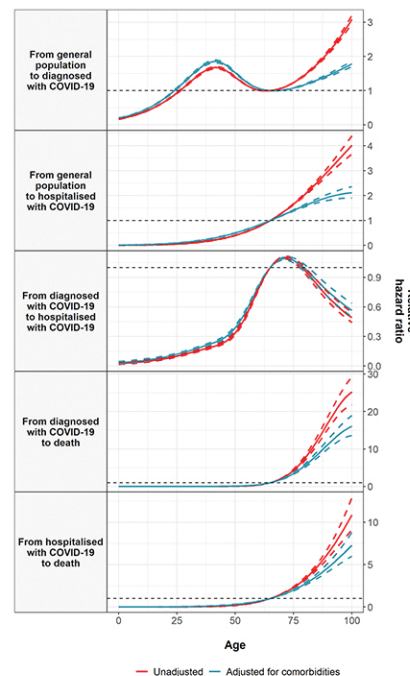
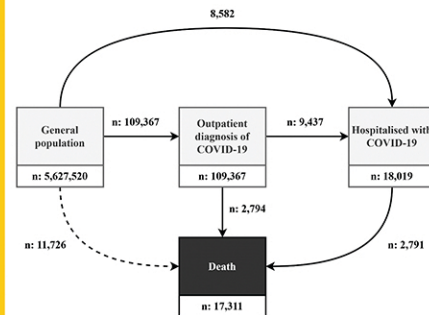
RESULTS

- 5,627,520 individuals were included.
- 109,367 had an outpatient diagnosis of COVID-19, 18,019 were hospitalised with COVID-19, and 5,585 died after either being diagnosed or hospitalised with COVID-19.
- Half of those who died were not admitted to hospital prior to their death.
- Risk of a diagnosis with COVID-19 peaked first in middle-age and then again for oldest ages, risk for hospitalisation after diagnosis peaked around 70 years old, with all other risks highest at oldest ages.
- Male gender was associated with an increased risk for all outcomes other than outpatient diagnosis.
- Comorbidities were associated with worse outcomes.

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Using COVID-19 data mapped to the OMOP CDM, we developed a multistate model to describe patient trajectories in Catalonia, Spain, between March and May 2020.



<https://www.medrxiv.org/content/10.1101/2020.07.13.20152454v1>