

Letter to the Editor

Mortality rate and gender differences in COVID-19 patients dying in Italy: A comparison with other countries

To the Editor

Current evidence about COVID-19 symptoms and mortality rate derives from data collected in large case series mainly in China, where the virus first emerged, even if the rate of new cases in the country has nearly stopped^{1,2}. There are now many more COVID-19 cases outside of China than there were inside of it at the height of the outbreak, that is now involving many other countries with relevant impact in particular in Spain, United States, and Italy³⁻⁵. As of the end of March 2020, Italy is the country with the highest number of COVID-19-related deaths with a total of 12428 deaths and a mortality rate close to 12%⁶.

According to the Istituto Superiore di Sanità, Italian epidemiologic data show that patients affected from one to 3 comorbidities and over 70 years are more likely to die due to COVID-19, with a male:female ratio of 3:1, and cardiovascular disease is the highest-risk condition⁷ (Figure 1). These data differ from the epidemiologic results observed in other countries where, according to the World Meter reports, there is a lower mortality rate (1 to 8%) there is a lower mortality rate than Italy and a male: female ratio of 2:1⁸.

There may be some epidemiologic and social factors might explain the differences between Italy and other countries.

At first, in Italy the majority of elderly patients died at home. Furthermore, these death were considered COVID-19 related although test positivity was confirmed post-mortem by nasopharyngeal swap. In addition, the nasopharyngeal swap was performed in all patients who died in a hospital setting where COVID-19 they were hospitalized. This may have increased the number of positive patients that died "with" COVID-19 and not "due to" COVID-19.

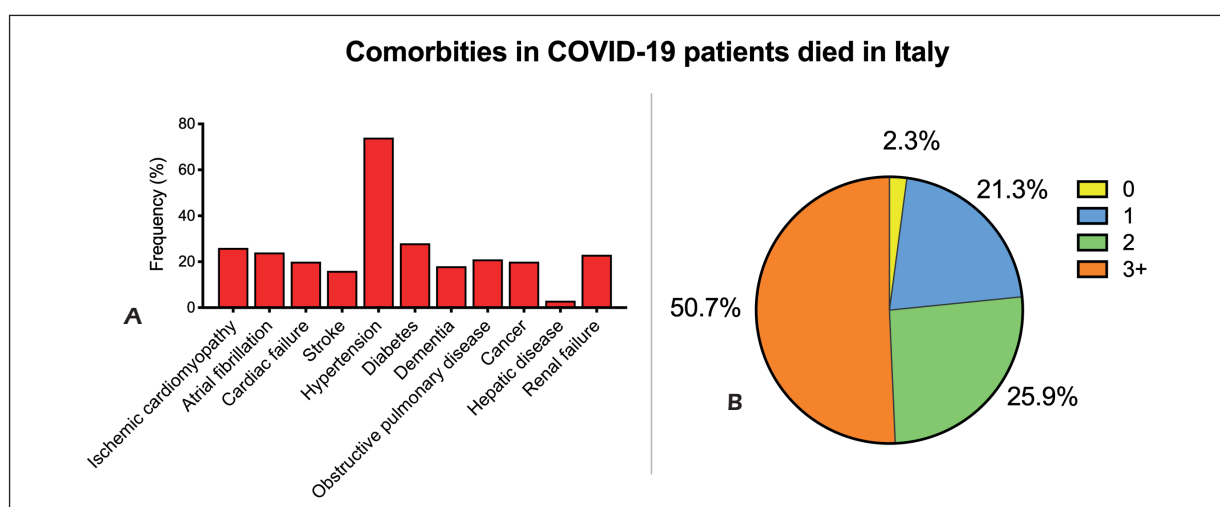


Figure 1. Type (A) and number (B) of comorbidities found in COVID-19 patients died in Italy according to the Istituto Superiore di Sanità⁷.

Secondly, the autoptic exam is not generally performed in COVID-19 patients due to the elevated number of deaths and the elevated risk of virus transmission through the procedure. Therefore, it is difficult to assess other factors that may have caused death in these patients.

Thirdly, many COVID-19 patients had one or more comorbidities, especially those over 60 years of age⁷. Comorbidities included hypertension, diabetes, and heart diseases and, along with age, certainly play a significant role in mortality rate following COVID-19 infection. Worldwide data have shown a mortality rate of 0.9% in patients without comorbidities, that increases progressively based on the number of comorbidities and age of the patients⁹. At the same time, it is well known that diseases as hypertension, type-2 diabetes and heart diseases are more prevalent in patients over 40 years of age¹⁰. These comorbidities could impact the correct function of the cardiovascular system and they could be indirectly responsible of the patient's death¹¹. In Italy, we observed a higher mortality rate compared to the Asian population that might be due to the higher prevalence of cardiovascular disease in this population. Similarly, the difference in male:female ratio between Italy and China reports may be due to the significant higher prevalence of cardiovascular diseases in males observed in the Italian population¹².

These hypotheses may explain the differences observed so far between Italian and Asian data^{13,14}. However, large case series with further correlations with risk factors, stratified for number and type of comorbidities and gender will allow a better epidemiological analysis of these data.

Conflict of interest

The authors declare that they have no conflict of interest.

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