



Characteristics of COVID-19 patients dying in Italy Report based on available data on April 9th, 2020

1. Sample

The present report describes characteristics of 16,654 COVID-19 patients dying in Italy.* Geographic distribution across the 19 regions and 2 autonomous provinces of Trento and Bozen is presented in the table below. Data are update to April 9th, 2020.

Tabel 1. Geographic distribution of deceased patients COVID-2019 positive

REGION	N	%
Lombardia	9,731	58.4
Emilia-Romagna	2,221	13.3
Piemonte	1,210	7.3
Veneto	756	4.5
Liguria	510	3.1
Marche	361	2.2
Toscana	269	1.6
Trento	255	1.5
Lazio	230	1.4
Puglia	224	1.3
Bolzano	184	1.1
Friuli-Venezia Giulia	172	1.0
Campania	122	0.7
Sicilia	105	0.6
Valle d'Aosta	89	0.5
Sardegna	57	0.3
Umbria	50	0.3
Calabria	46	0.3
Abruzzo	33	0.2
Basilicata	16	0.1
Molise	13	0.1
Total	16,654	100.0

* COVID-19 related deaths presented in this report are those occurring in patients who test positive for SARSCoV-2 RT by PCR, independently from pre-existing diseases.

2. Demographics

Mean age of patients dying for COVID-2019 infection was 78 (median 80, range 5-100, IQR 73 -85). Women were 5,478 (32.9%). *Figure 1* shows that median age of patients dying for COVID-2019 infection was more than 15 years higher as compared with the national sample diagnosed with COVID-2019 infection (median age 62 years). *Figure 2* shows the absolute number of deaths by age group. Women dying for COVID-2019 infection had an older age than men (median age women 83 - median age men 78).

Figure 1. Median age of patients with COVID-2019 infection and COVID-19 positive deceased patients

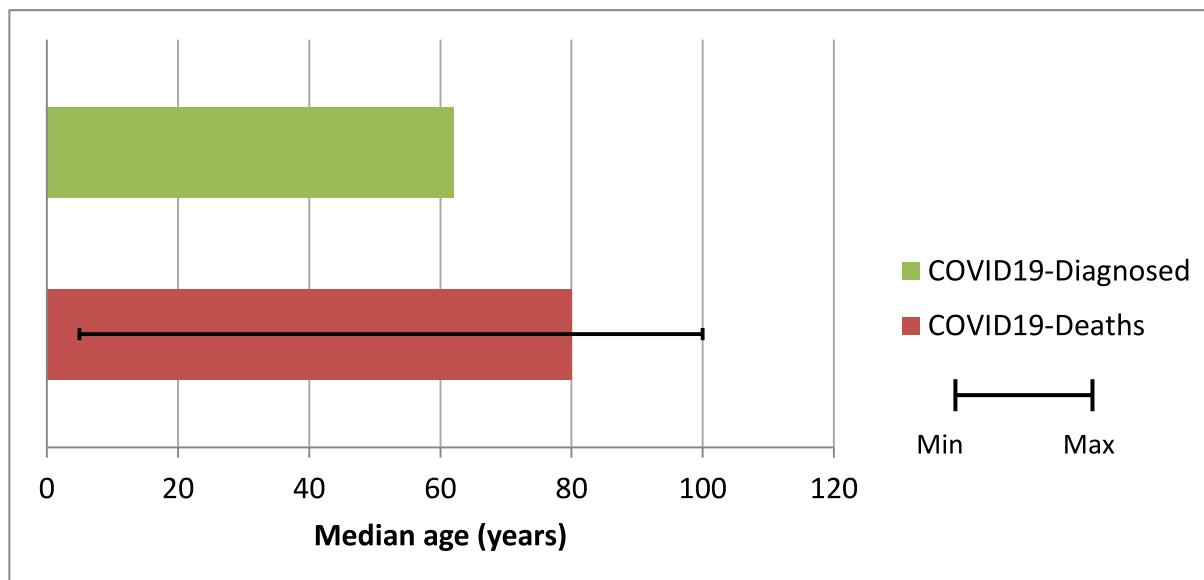
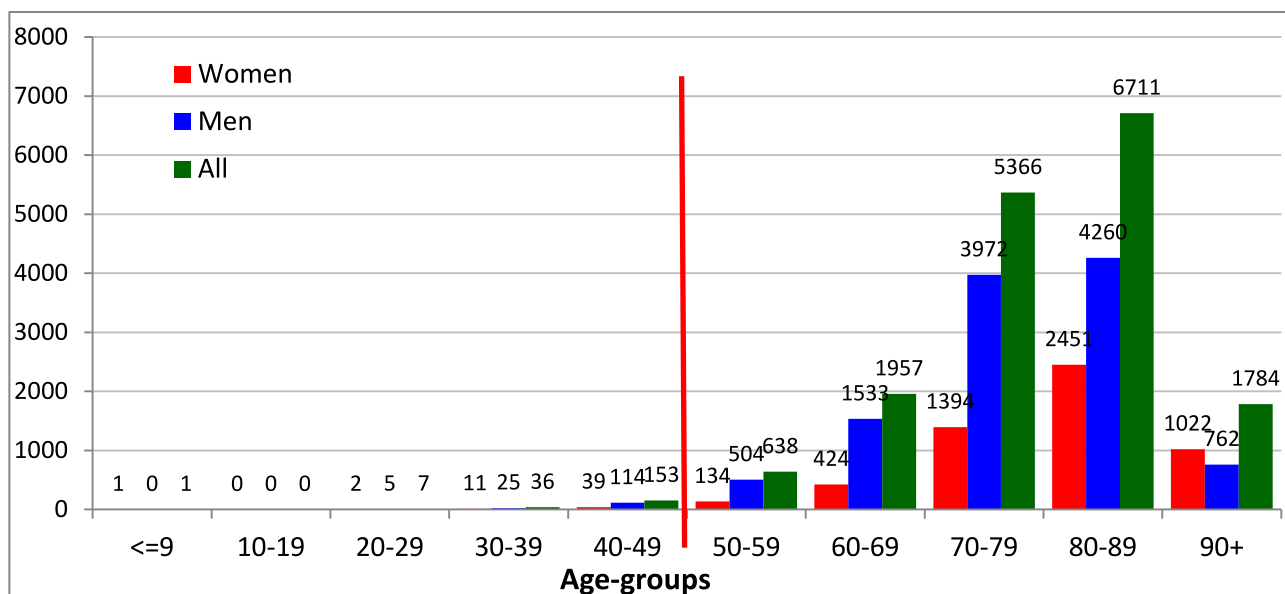


Figure 2. Absolute number of deaths by age group



Note: For 1 deceased person age was not possible to be evaluated

3. Pre-existing conditions

Table 1 presents most common comorbidities diagnosed before COVID-2019 infection. Data on diseases were based on chart review and was available on 1,453 patients dying in-hospital for whom it was possible to analyse clinic charts. Mean number of diseases was 3.3 (median 3, SD 1.9). Overall, 3.5% of the sample presented with a no comorbidities, 14.8% with a single comorbidity, 20.7% with 2, and 61.0% with 3 or more.

Before hospitalization, 25% of COVID-19 positive deceased patients followed ACE-inhibitor therapy and 15% angiotensin receptor blockers-ARBs therapy. This information can be underestimated because data on drug treatment before admission were not always described in the chart.

Table 1. Most common comorbidities observed in COVID-19 positive deceased patients

Diseases	N	%
<i>Ischemic heart disease</i>	<i>407</i>	<i><u>28.0</u></i>
<i>Atrial Fibrillation</i>	<i>328</i>	<i><u>22.6</u></i>
<i>Heart failure</i>	<i>228</i>	<i>15.7</i>
<i>Stroke</i>	<i>159</i>	<i>10.9</i>
<i>Hypertension</i>	<i>1015</i>	<i><u>69.9</u></i>
<i>Type 2-Diabetes</i>	<i>462</i>	<i><u>31.8</u></i>
<i>Dementia</i>	<i>219</i>	<i>15.1</i>
<i>COPD</i>	<i>256</i>	<i>17.6</i>
<i>Active cancer in the past 5 years</i>	<i>236</i>	<i>16.2</i>
<i>Chronic liver disease</i>	<i>54</i>	<i>3.7</i>
<i>Chronic renal failure</i>	<i>335</i>	<i><u>23.1</u></i>
<i>HIV</i>	<i>3</i>	<i>0.2</i>
<i>Autoimmune diseases</i>	<i>46</i>	<i>3.2</i>
<i>Obesity</i>	<i>156</i>	<i>10.7</i>
Number of comorbidities		
<i><u>0 comorbidities</u></i>	<i><u>51</u></i>	<i><u>3.5</u></i>
<i>1 comorbidity</i>	<i>215</i>	<i>14.8</i>
<i>2 comorbidities</i>	<i>301</i>	<i>20.7</i>
<i>3 comorbidities and over</i>	<i>886</i>	<i>61.0</i>

Table 3 presents the most common pre-existing chronic pathologies in patients who died, separately in men (n = 1,005) and women (n = 448). The average number of pathologies observed in women is 3.3 (median 3, Standard Deviation 1.9). In men the average number of pathologies observed is 3.2 (median 3, Standard Deviation 1.9).

Tabella 3. Most common comorbidities observed in COVID-19 positive deceased patients by gender

Women			Men	
Diseases	N	%	N	%
<i>Ischemic heart disease</i>	90	20.1	317	31.5
<i>Atrial Fibrillation</i>	105	23.4	223	22.2
<i>Heart Failure</i>	95	20.3	133	13.0
<i>Stroke</i>	44	9.8	115	11.4
<i>Hypertension</i>	330	73.7	685	68.2
<i>Type 2-Diabetes</i>	133	29.7	329	32.7
<i>Dementia</i>	88	19.6	131	13.0
<i>COPD</i>	59	13.2	197	19.6
<i>Active cancer in the past 5 years</i>	68	15.2	168	16.7
<i>Chronic liver disease</i>	12	2.7	42	4.2
<i>Chronic renal failure</i>	90	20.1	245	24.4
<i>HIV</i>	0	0.0	3	0.3
<i>Autoimmune diseases</i>	22	4.9	24	2.4
<i>Obesity</i>	59	13.2	97	9.7
Number of comorbidities				
<i>0 comorbidities</i>	9	2.0	42	4.2
<i>1 comorbidity</i>	63	14.1	152	15.1
<i>2 comorbidities</i>	100	22.3	201	20.0
<i>3 comorbidities and over</i>	276	61.6	610	60.7

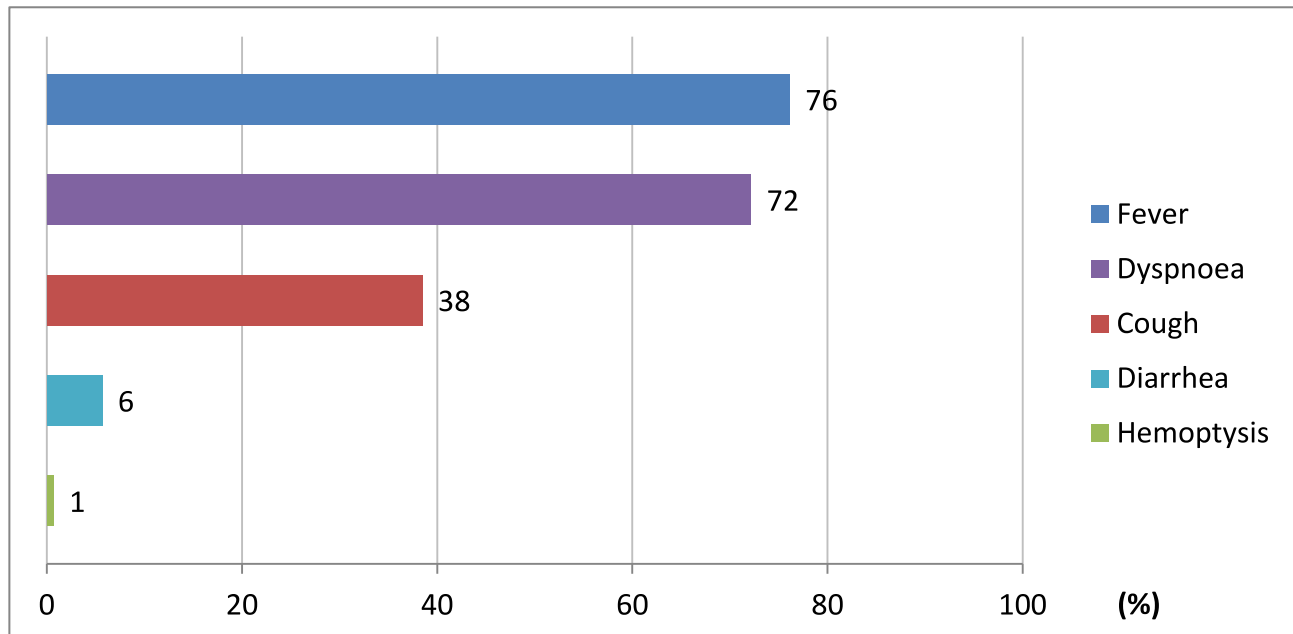
4. Diagnosis of hospitalization

In 93.5% of hospitalizations, conditions (e.g. pneumonia, respiratory failure) or symptoms (e.g. fever, dyspnoea, cough) compatible with COVID-19 were mentioned. In 91 cases (6.5% of cases) the diagnosis of hospitalization was not related to the infection. In 8 cases the diagnosis of hospitalization concerned exclusively neoplastic pathologies, in 40 cases cardiovascular pathologies (for example IMA, heart failure, stroke), in 13 cases gastrointestinal pathologies (for example cholecystitis, perforation of the intestine, intestinal obstruction, cirrhosis), in 30 cases other pathologies.

5. Symptoms

Figure 3 shows symptoms most commonly observed at hospital admission. Fever, dyspnoea and cough were the most commonly observed symptoms, while diarrhoea and haemoptysis were less commonly observed. Overall, 5.7% of patients did not present any symptoms at hospital admission.

Figure 3. Most common symptoms observed in COVID-19 positive deceased patients



6. Acute conditions

Acute Respiratory Distress syndrome was observed in the majority of patients (96.7% of cases), followed by acute renal failure (23.5%). Superinfection was observed in 11.0% and acute cardiac injury in 9.8% of cases.

7. Treatments

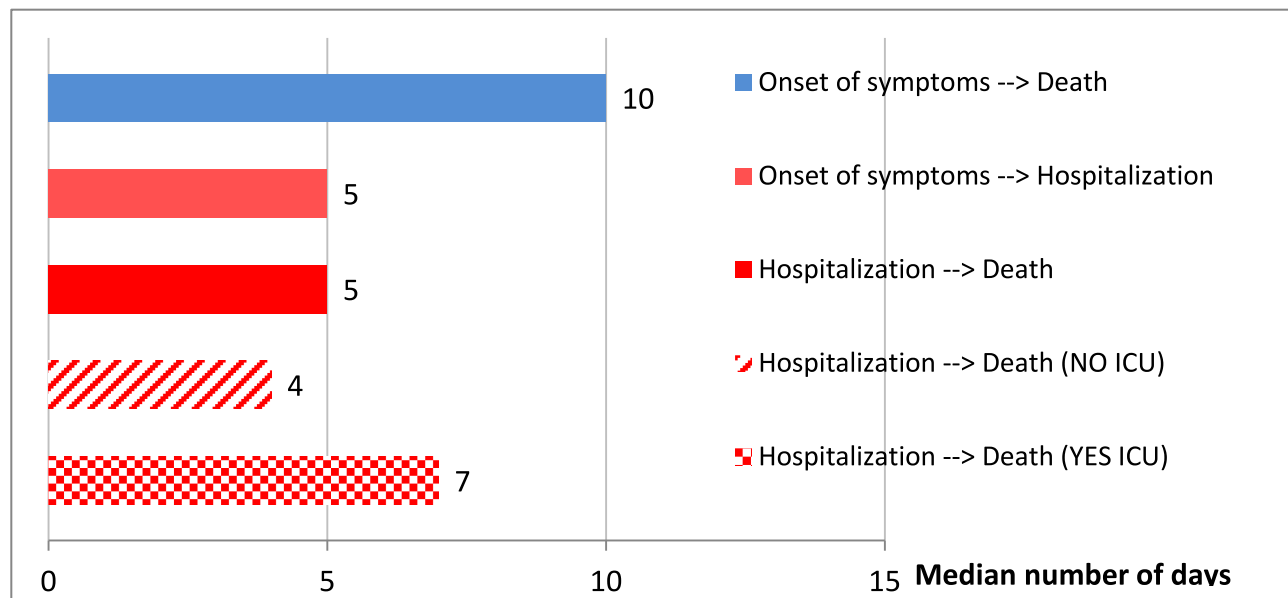
Antibiotics were used by 84% of patients during hospital stay, while less used were antivirals (55%) and corticosteroids (33%). Concomitant use of these 3 treatments was observed in 18.6% of cases.

Out of COVID-19 positive deceased patients, 2.7% were treated with Tocilizumab during hospitalization.

8. Time-line

Figure 4 shows, for COVID-19 positive deceased patients, the median times, in days, from the onset of symptoms to death (10 days), from the onset of symptoms to hospitalization (5 days) and from hospitalization to death (5 days). The time from hospitalization to death was 3 days longer in those who were transferred to intensive care than those who were not transferred (7 days vs. 4 days).

Figure 4. Median hospitalization times (in days) in COVID-19 positive deceased patients



9. Deaths under the age of 50 years

As of April 9th, 197 out of the 16,654 (1.2%) positive COVID-19 patients under the age of 50 died. In particular, 44 of these were less than 40 years, 30 men and 14 women (age range between 5 and 39 years). For 7 patients under the age of 40 years no clinical information is available; the remaining 29 had serious pre-existing pathologies (cardiovascular, renal, psychiatric pathologies, diabetes, obesity) and 8 had no major pathologies.

This report was produced by COVID-19 Surveillance Group

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