



Characteristics of SARS-CoV-2 patients dying in Italy Report based on available data on June 18th, 2020

1. Sample

The present report describes characteristics of 33,309 SARS-CoV-2 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 June 18th, 2020.

Table 1. Geographic distribution of deceased patients SARS-CoV-2 positive

REGION	N	%
Lombardia	16,480	49.5
Emilia Romagna	4,215	12.7
Piemonte	2,906	8.7
Veneto	1,994	6.0
Liguria	1,582	4.7
Toscana	1,092	3.3
Marche	958	2.9
Lazio	806	2.4
Puglia	538	1.6
Trento	469	1.4
Abruzzo	457	1.4
Campania	372	1.1
Friuli Venezia Giulia	343	1.0
Sicilia	303	0.9
Bolzano	292	0.9
Valle d'Aosta	144	0.4
Sardegna	132	0.4
Calabria	97	0.3
Umbria	77	0.2
Basilicata	29	0.1
Molise	23	0.1
Total	33,309	100.0

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

2. Demographics

Mean age of patients dying for SARS-CoV-2 infection was 80 years (median 82, range 0-100, IQR 74 -88). Women were 13,913 (41.8%). *Figure 1* shows that median age of patients dying for SARS-CoV-2 infection was 20 years higher as compared with the national sample diagnosed with SARS-CoV-2 infection (median age 62 years). *Figure 2* shows the absolute number of deaths by age group. Women dying for SARS-CoV-2 infection had an older age than men (median age women 85 - median age men 79).

Figure 1. Median age of patients with SARS-CoV-2 infection and SARS-CoV-2 positive deceased patients

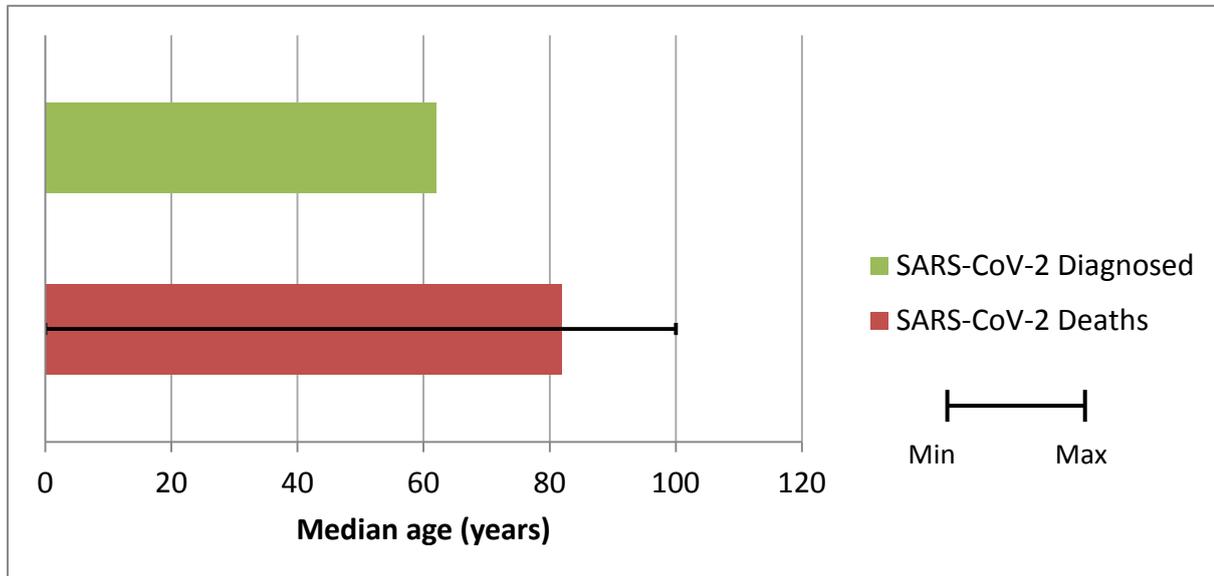
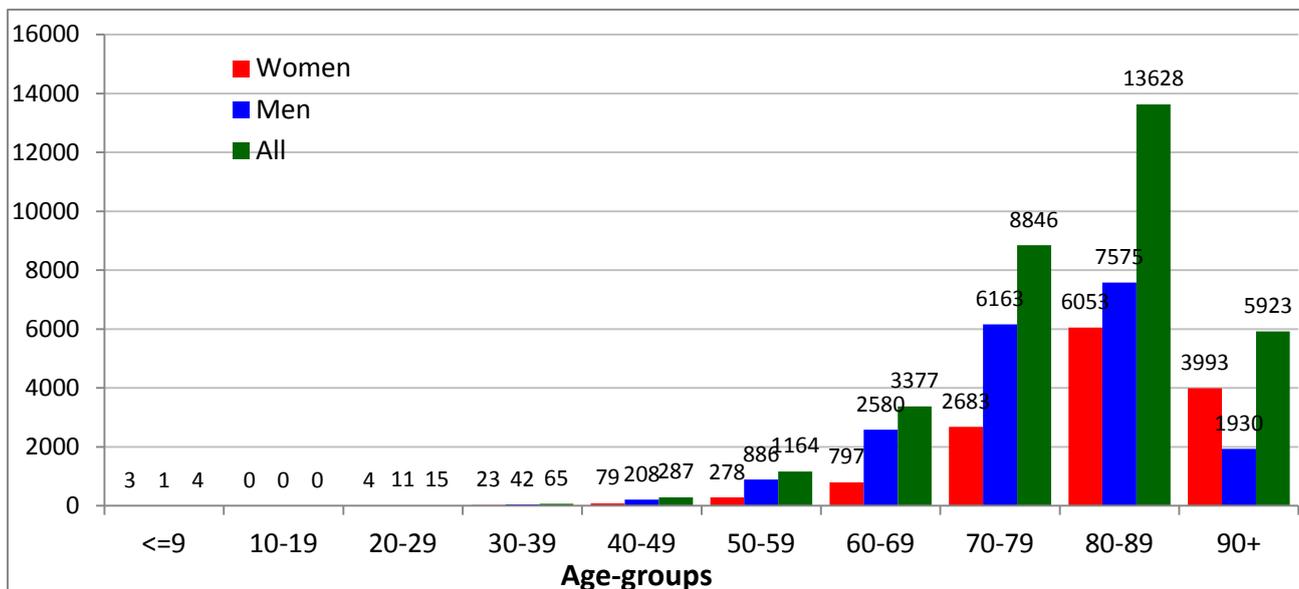


Figure 2. Absolute number of deaths by age group



3. Pre-existing conditions

Table 2 presents most common comorbidities diagnosed before SARS-CoV-2 infection. Data on diseases were based on chart review and was available on 3,510 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, 4.2% of the sample presented with a no comorbidities, 14.7% with a single comorbidity, 21.5% with 2, and 59.7% with 3 or more.

Before hospitalization, 23% of SARS-CoV-2 positive deceased patients followed ACE-inhibitor therapy and 16% 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 2. Most common comorbidities observed in SARS-CoV-2 positive deceased patients

Diseases	N	%
<i>Ischemic heart disease</i>	970	27.6
<i>Atrial Fibrillation</i>	774	22.1
<i>Heart failure</i>	547	15.6
<i>Stroke</i>	358	10.2
<i>Hypertension</i>	2344	66.8
<i>Type 2-Diabetes</i>	1055	30.1
<i>Dementia</i>	581	16.6
<i>COPD (Chronic Obstructive Pulmonary Disease)</i>	588	16.8
<i>Active cancer in the past 5 years</i>	559	15.9
<i>Chronic liver disease</i>	152	4.3
<i>Chronic renal failure</i>	699	19.9
<i>Dialysis</i>	68	1.9
<i>Respiratory failure</i>	183	5.2
<i>HIV Infection</i>	7	0.2
<i>Autoimmune diseases</i>	139	4.0
<i>Obesity</i>	386	11.0
Number of comorbidities		
<i>0 comorbidities</i>	147	4.2
<i>1 comorbidity</i>	516	14.7
<i>2 comorbidities</i>	753	21.5
<i>3 comorbidities and over</i>	2094	59.7

Table 3 presents the most common pre-existing chronic pathologies in patients who died, separately in men (n = 2,344 and women (n = 1,166). 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 2.0).

Table 3. Most common comorbidities observed in SARS-CoV-2 positive deceased patients by gender

	Women		Men	
Diseases	N	%	N	%
<i>Ischemic heart disease</i>	241	20.7	729	31.1
<i>Atrial Fibrillation</i>	269	23.1	505	21.5
<i>Heart Failure</i>	214	17.8	333	13.9
<i>Stroke</i>	122	10.5	236	10.1
<i>Hypertension</i>	793	68.0	1551	66.2
<i>Type 2-Diabetes</i>	327	28.0	728	31.1
<i>Dementia</i>	279	23.9	302	12.9
<i>COPD (Chronic Obstructive Pulmonary Disease)</i>	146	12.5	442	18.9
<i>Active cancer in the past 5 years</i>	188	16.1	371	15.8
<i>Chronic liver disease</i>	38	3.3	114	4.9
<i>Chronic renal failure</i>	204	17.5	495	21.1
<i>Dialysis</i>	19	1.6	49	2.1
<i>Respiratory failure</i>	63	5.4	120	5.1
<i>HIV Infection</i>	0	0.0	7	0.3
<i>Autoimmune diseases</i>	68	5.8	71	3.0
<i>Obesity</i>	131	11.2	255	10.9
Number of comorbidities				
<i>0 comorbidities</i>	34	2.9	113	4.8
<i>1 comorbidity</i>	164	14.1	352	15.0
<i>2 comorbidities</i>	255	21.9	498	21.2
<i>3 comorbidities and over</i>	713	61.1	1381	58.9

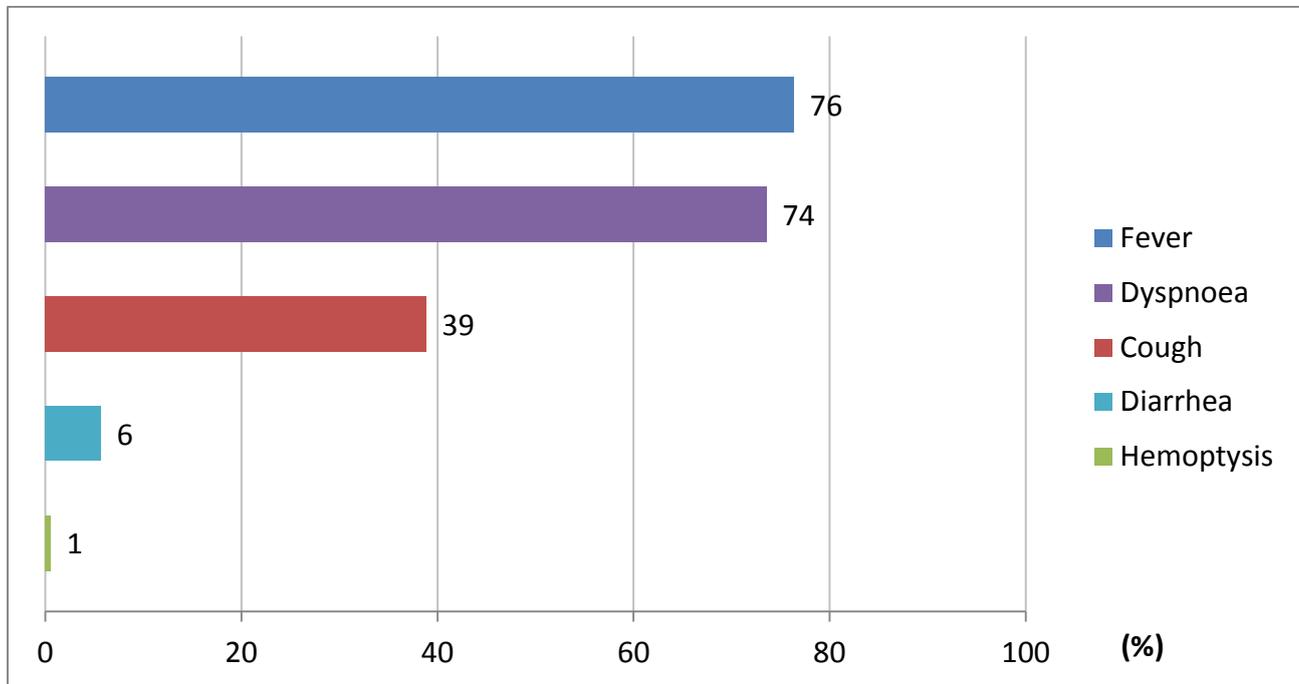
4. Diagnosis of hospitalization

In 92.3% of hospitalizations, conditions (e.g. pneumonia, respiratory failure) or symptoms (e.g. fever, dyspnoea, cough) compatible with SARS-CoV-2 were mentioned. In 249 cases (7.7% of cases) the diagnosis of hospitalization was not related to the infection. In 38 cases the diagnosis of hospitalization concerned exclusively neoplastic pathologies, in 92 cases cardiovascular pathologies (for example Acute Myocardial Infarction-AMI, heart failure, stroke), in 31 cases gastrointestinal pathologies (for example cholecystitis, perforation of the intestine, intestinal obstruction, cirrhosis), in 88 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 SARS-CoV-2 positive deceased patients



6. Acute conditions

Acute Respiratory Distress syndrome was observed in the majority of patients (96.8% of cases), followed by acute renal failure (22.1%). Superinfection was observed in 13.3% and acute cardiac injury in 10.9% of cases.

7. Treatments

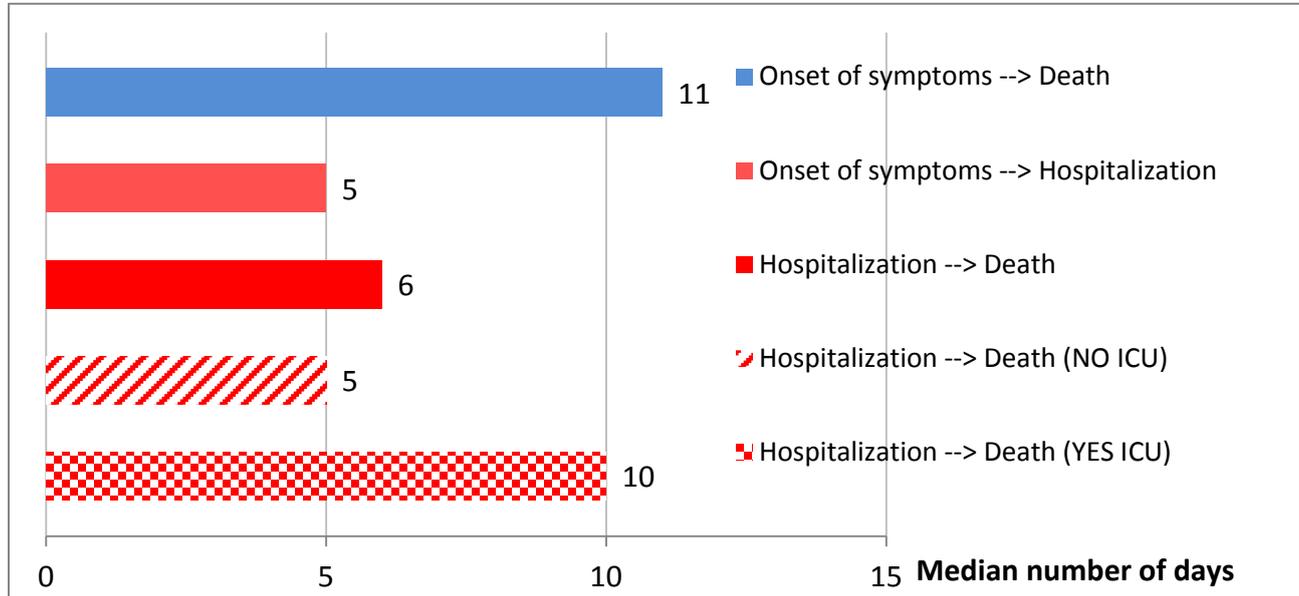
Antibiotics were used by 86% of patients during hospital stay, while less used were antivirals (60%) and corticosteroids (38%). Concomitant use of these 3 treatments was observed in 23.6% of cases.

Out of SARS-CoV-2 positive deceased patients, 3.9% were treated with Tocilizumab during hospitalization.

8. Time-line

Figure 4 shows, for SARS-CoV-2 positive deceased patients, the median times, in days, from the onset of symptoms to death (11 days), from the onset of symptoms to hospitalization (5 days) and from hospitalization to death (6 days). The time from hospitalization to death was 5 days longer in those who were transferred to intensive care than those who were not transferred (10 days vs. 5 days).

Figure 4. Median hospitalization times (in days) in SARS-CoV-2 positive deceased patients



9. Deaths under the age of 50 years

As of June 18th, 371 out of the 33,309 (1.1%) positive SARS-CoV-2 patients under the age of 50 died. In particular, 84 of these were less than 40 years (54 men and 30 women), age range between 0 and 39 years. For 8 patients under the age of 40 years no clinical information is available; out of the remaining ones, 62 had serious pre-existing pathologies (cardiovascular, renal, psychiatric pathologies, diabetes, obesity) and 14 had no major pathologies.

This report was produced by SARS-CoV-2 Surveillance Group

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