



Characteristics of SARS-CoV-2 patients dying in Italy Report based on available data on June 25th, 2020

1. Sample

The present report describes characteristics of 33,532 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 25th, 2020.

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

REGION	N	%
Lombardia	16,586	49.5
Emilia Romagna	4,245	12.7
Piemonte	2,975	8.9
Veneto	2,006	6.0
Liguria	1,608	4.8
Toscana	1,103	3.3
Marche	959	2.9
Lazio	808	2.4
Puglia	543	1.6
Trento	461	1.4
Abruzzo	405	1.2
Campania	385	1.1
Friuli Venezia Giulia	346	1.0
Sicilia	305	0.9
Bolzano	292	0.9
Valle d'Aosta	146	0.4
Sardegna	132	0.4
Calabria	97	0.3
Umbria	78	0.2
Basilicata	29	0.1
Molise	23	0.1
Total	33,532	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 14,069 (42.0%). *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

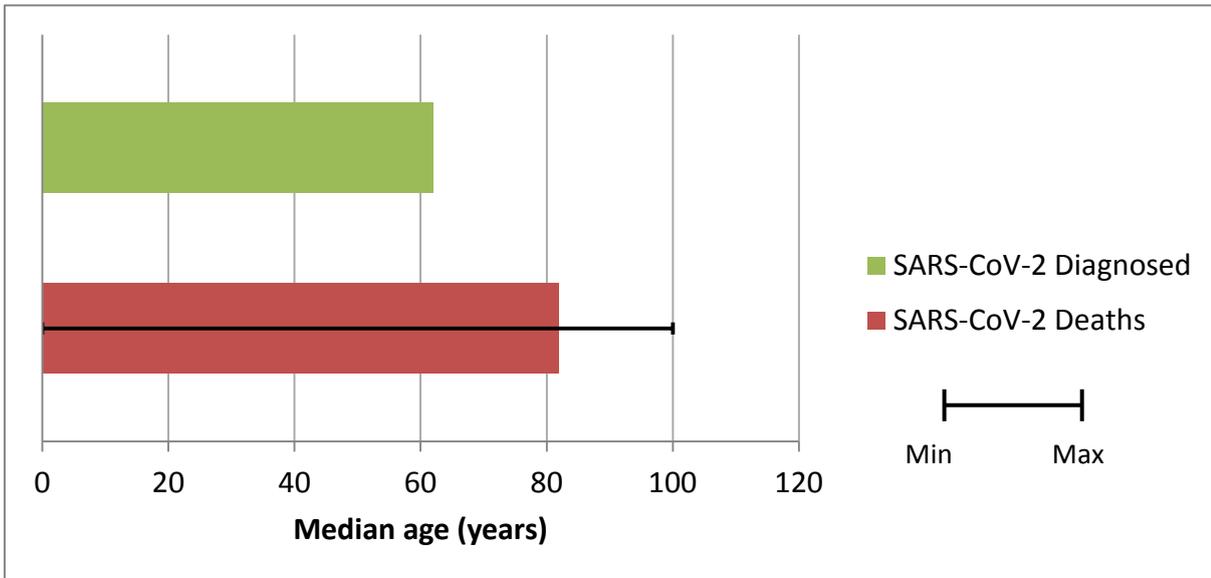
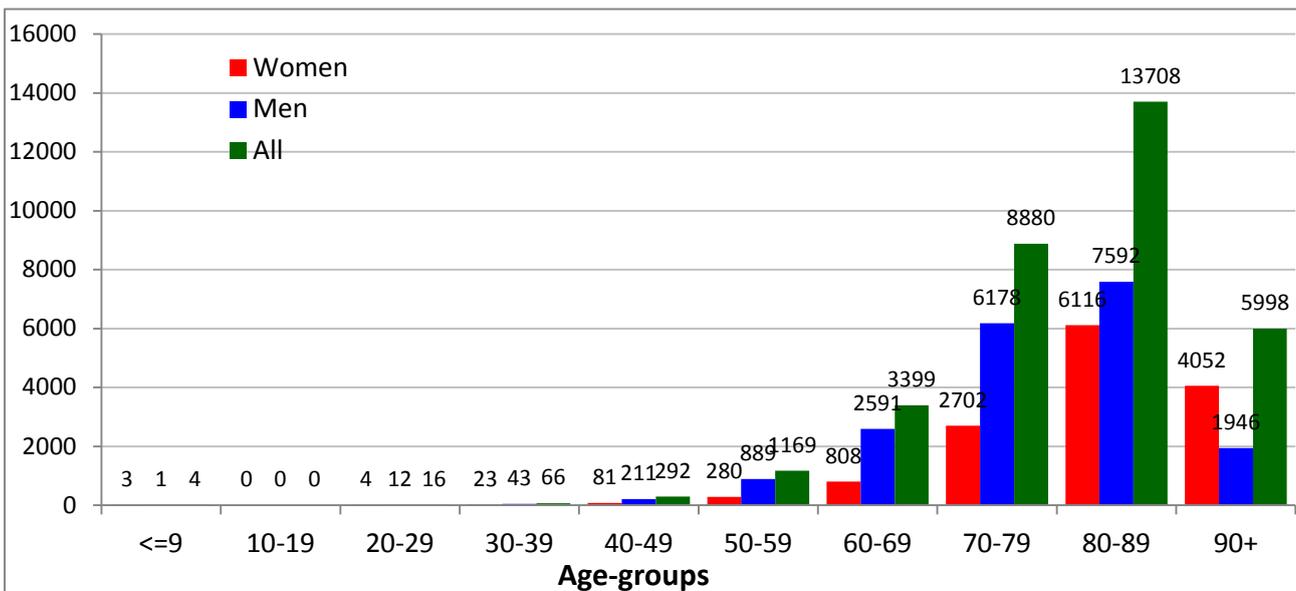


Figure 2. Absolute number of deaths by age group



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 3,602 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, 4.1% of the sample presented with a no comorbidities, 14.5% with a single comorbidity, 21.3% with 2, and 60.1% 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>	993	27.6
<i>Atrial Fibrillation</i>	798	22.2
<i>Heart failure</i>	563	15.6
<i>Stroke</i>	372	10.3
<i>Hypertension</i>	2406	66.8
<i>Type 2-Diabetes</i>	1079	30.0
<i>Dementia</i>	612	17.0
<i>COPD (Chronic Obstructive Pulmonary Disease)</i>	601	16.7
<i>Active cancer in the past 5 years</i>	578	16.0
<i>Chronic liver disease</i>	157	4.4
<i>Chronic renal failure</i>	716	19.9
<i>Dialysis</i>	69	1.9
<i>Respiratory failure</i>	191	5.3
<i>HIV Infection</i>	7	0.2
<i>Autoimmune diseases</i>	141	3.9
<i>Obesity</i>	398	11.0
Number of comorbidities		
<i>0 comorbidities</i>	148	4.1
<i>1 comorbidity</i>	522	14.5
<i>2 comorbidities</i>	767	21.3
<i>3 comorbidities and over</i>	2165	60.1

Table 3 presents the most common pre-existing chronic pathologies in patients who died, separately in men (n = 2,391 and women (n = 1,211). The average number of pathologies observed in women is 3.4 (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>	251	20.7	742	31.0
<i>Atrial Fibrillation</i>	283	23.4	515	21.5
<i>Heart Failure</i>	222	17.8	341	14.0
<i>Stroke</i>	127	10.5	245	10.2
<i>Hypertension</i>	825	68.1	1581	66.1
<i>Type 2-Diabetes</i>	342	28.2	737	30.8
<i>Dementia</i>	297	24.5	315	13.2
<i>COPD (Chronic Obstructive Pulmonary Disease)</i>	155	12.8	446	18.7
<i>Active cancer in the past 5 years</i>	198	16.4	380	15.9
<i>Chronic liver disease</i>	40	3.3	117	4.9
<i>Chronic renal failure</i>	212	17.5	504	21.1
<i>Dialysis</i>	20	1.7	49	2.0
<i>Respiratory failure</i>	66	5.5	125	5.2
<i>HIV Infection</i>	0	0.0	7	0.3
<i>Autoimmune diseases</i>	70	5.8	71	3.0
<i>Obesity</i>	139	11.5	259	10.8
Number of comorbidities				
<i>0 comorbidities</i>	34	2.8	114	4.8
<i>1 comorbidity</i>	166	13.7	356	14.9
<i>2 comorbidities</i>	262	21.6	505	21.1
<i>3 comorbidities and over</i>	749	61.8	1416	59.2

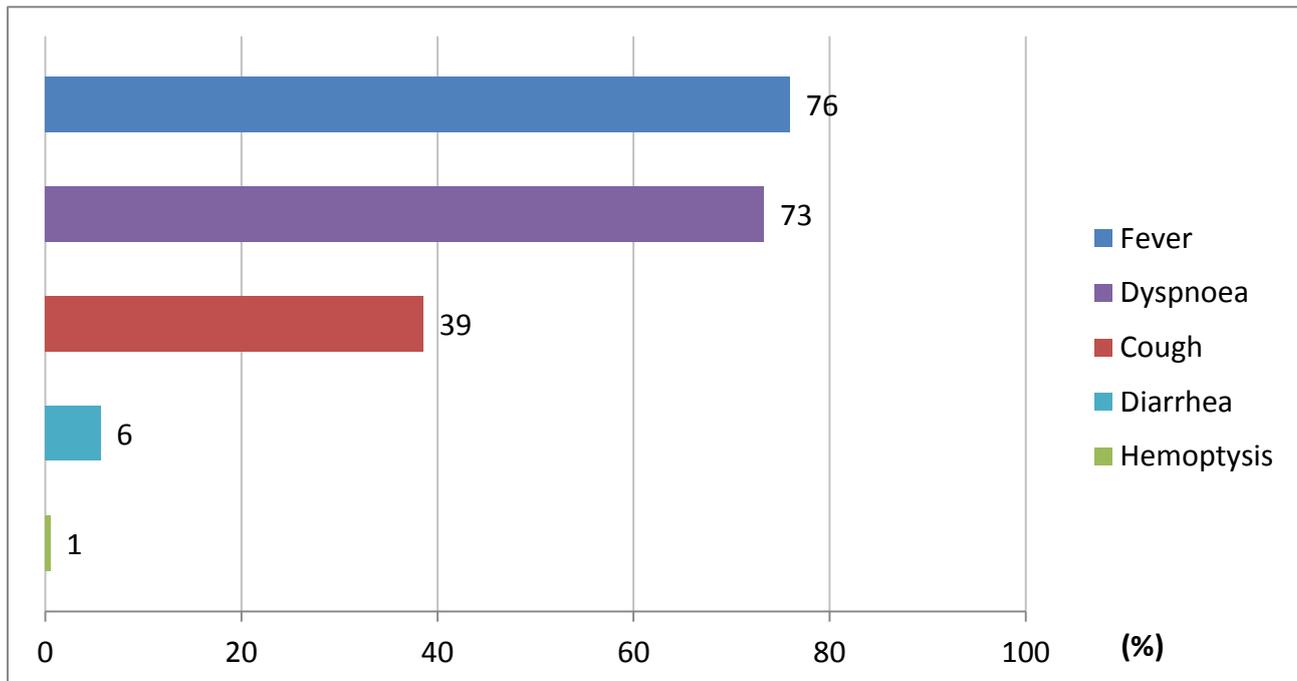
4. Diagnosis of hospitalization

In 92.1% of hospitalizations, conditions (e.g. pneumonia, respiratory failure) or symptoms (e.g. fever, dyspnoea, cough) compatible with SARS-CoV-2 were mentioned. In 260 cases (7.9% of cases) the diagnosis of hospitalization was not related to the infection. In 40 cases the diagnosis of hospitalization concerned exclusively neoplastic pathologies, in 94 cases cardiovascular pathologies (for example Acute Myocardial Infarction-AMI, heart failure, stroke), in 34 cases gastrointestinal pathologies (for example cholecystitis, perforation of the intestine, intestinal obstruction, cirrhosis), in 92 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, 6.0% 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 (96.5% of cases), followed by acute renal failure (21.9%). Superinfection was observed in 13.8% and acute cardiac injury in 10.8% of cases.

7. Treatments

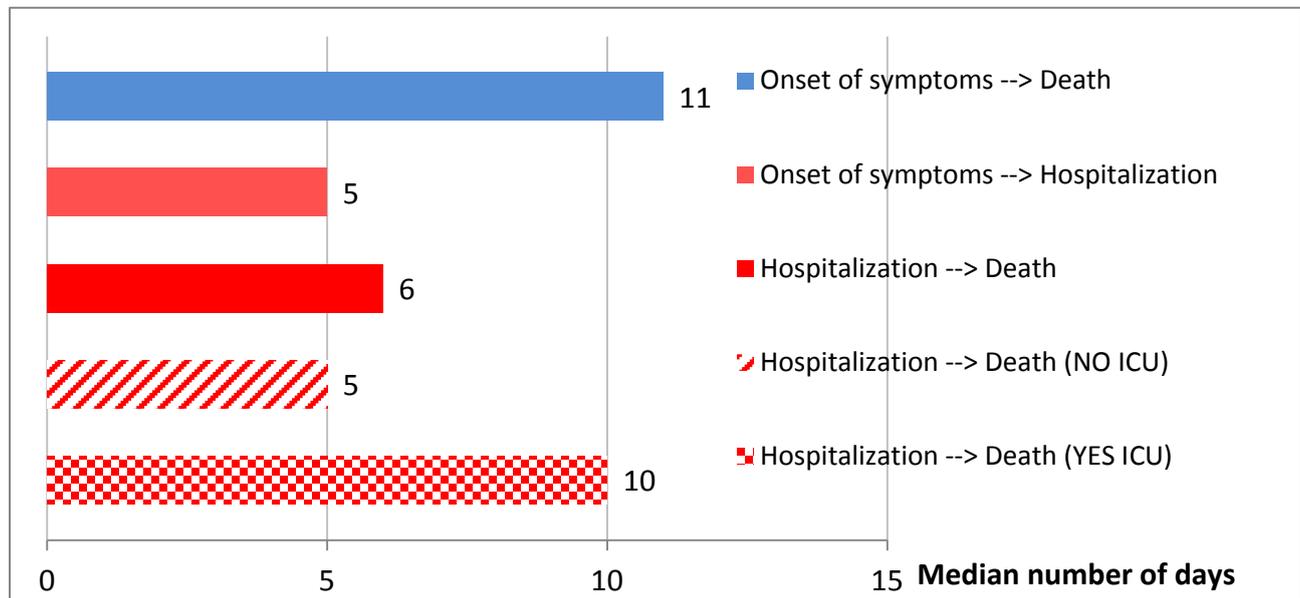
Antibiotics were used by 86% of patients during hospital stay, while less used were antivirals (60%) and corticosteroids (39%). Concomitant use of these 3 treatments was observed in 23.8% of cases.

Out of SARS-CoV-2 positive deceased patients, 4.1% 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 25th, 378 out of the 33,532 (1.1%) positive SARS-CoV-2 patients under the age of 50 died. In particular, 86 of these were less than 40 years (56 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, 64 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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