



Characteristics of SARS-CoV-2 patients dying in Italy Report based on available data on July 9th, 2020

1. Sample

The present report describes characteristics of 34,026 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 July 9th, 2020.

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

REGION	N	%
Lombardia	16,740	49.2
Emilia Romagna	4,269	12.5
Piemonte	3,079	9.0
Veneto	2,037	6.0
Liguria	1,657	4.9
Toscana	1,123	3.3
Marche	961	2.8
Lazio	845	2.5
Puglia	546	1.6
Abruzzo	464	1.4
Campania	446	1.3
Trento	405	1.2
Friuli Venezia Giulia	347	1.0
Sicilia	306	0.9
Bolzano	292	0.9
Valle d'Aosta	146	0.4
Sardegna	134	0.4
Calabria	97	0.3
Umbria	80	0.2
Basilicata	29	0.1
Molise	23	0.1
Total	34,026	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 14,359 (42.2%). *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 61 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

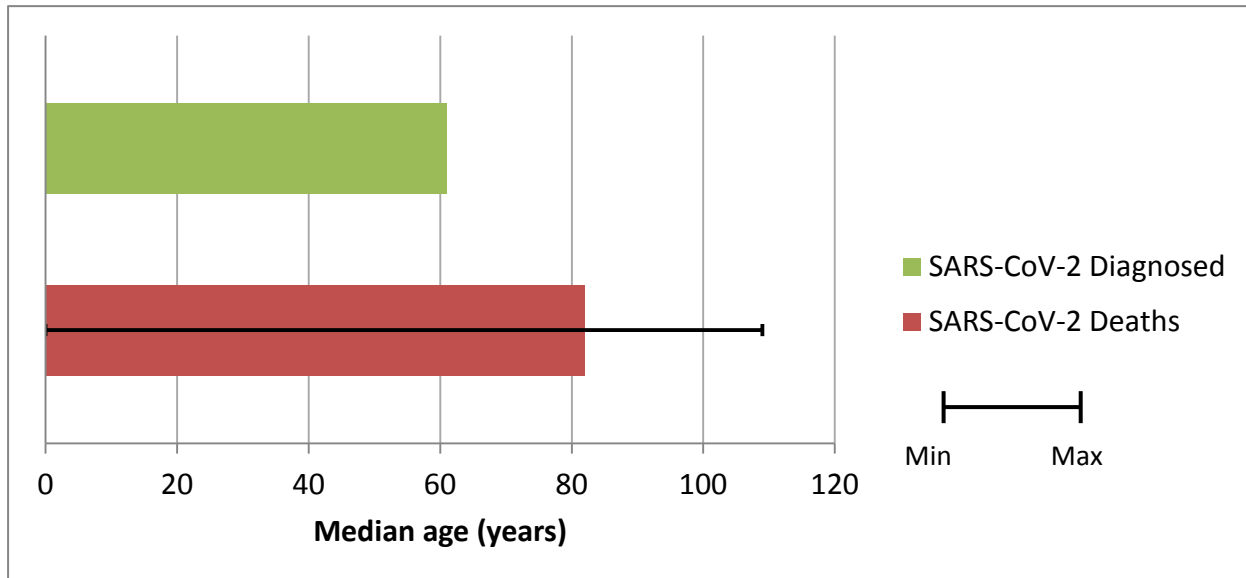
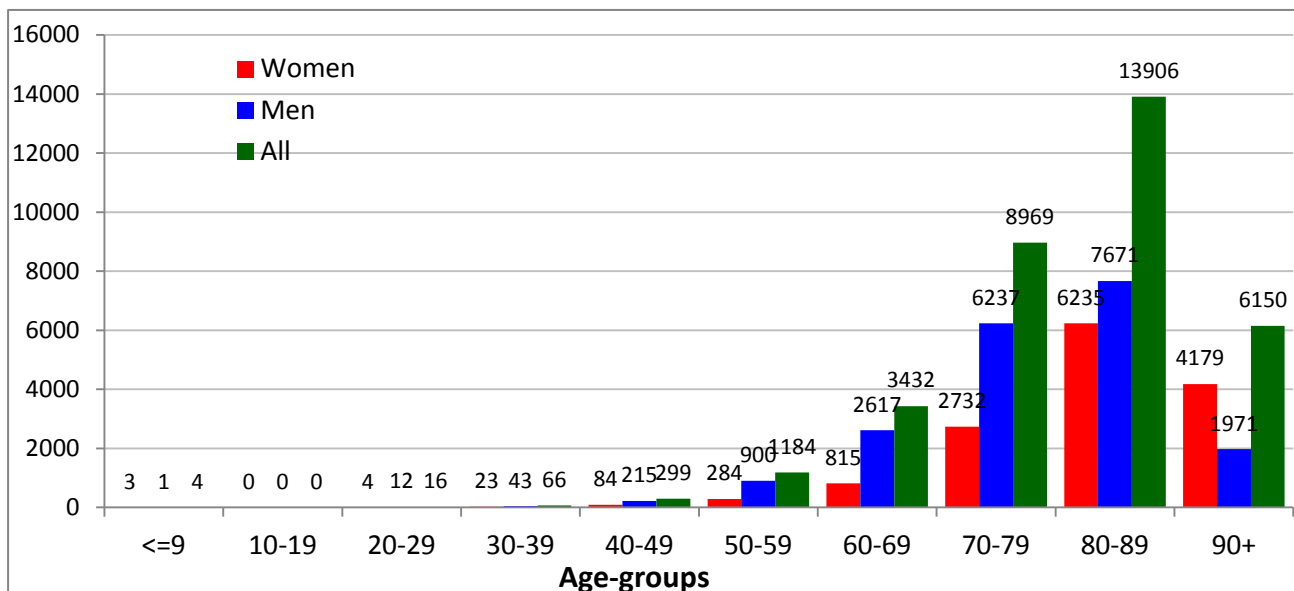


Figure 2. Absolute number of deaths by age group



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 3,857 patients dying in-hospital for whom it was possible to analyse clinic charts. Mean number of diseases was 3.3 (median 3, SD 2.0). Overall, 4.0% of the sample presented with a no comorbidities, 14.0% with a single comorbidity, 20.6% with 2, and 61.4% with 3 or more.

Before hospitalization, 22% of SARS-CoV-2 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 2. Most common comorbidities observed in SARS-CoV-2 positive deceased patients

Diseases	N	%
<i>Ischemic heart disease</i>	1067	27.7
<i>Atrial Fibrillation</i>	886	23.0
<i>Heart failure</i>	611	15.8
<i>Stroke</i>	400	10.4
<i>Hypertension</i>	2555	66.2
<i>Type 2-Diabetes</i>	1149	29.8
<i>Dementia</i>	719	18.6
<i>COPD (Chronic Obstructive Pulmonary Disease)</i>	648	16.8
<i>Active cancer in the past 5 years</i>	620	16.1
<i>Chronic liver disease</i>	167	4.3
<i>Chronic renal failure</i>	784	20.3
<i>Dialysis</i>	76	2.0
<i>Respiratory failure</i>	204	5.3
<i>HIV Infection</i>	7	0.2
<i>Autoimmune diseases</i>	150	3.9
<i>Obesity</i>	419	10.9
Number of comorbidities		
<i>0 comorbidities</i>	153	4.0
<i>1 comorbidity</i>	541	14.0
<i>2 comorbidities</i>	796	20.6
<i>3 comorbidities and over</i>	2367	61.4

Table 3 presents the most common pre-existing chronic pathologies in patients who died, separately in men (n = 2,522 and women (n = 1,335). The average number of pathologies observed in women is 3.5 (median 3, Standard Deviation 1.9). In men the average number of pathologies observed is 3.3 (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>	289	21.6	778	30.8
<i>Atrial Fibrillation</i>	328	24.6	558	22.1
<i>Heart Failure</i>	247	18.0	364	14.2
<i>Stroke</i>	141	10.6	259	10.3
<i>Hypertension</i>	906	67.9	1649	65.4
<i>Type 2-Diabetes</i>	372	27.9	777	30.8
<i>Dementia</i>	362	27.1	357	14.2
<i>COPD (Chronic Obstructive Pulmonary Disease)</i>	172	12.9	476	18.9
<i>Active cancer in the past 5 years</i>	213	16.0	407	16.1
<i>Chronic liver disease</i>	44	3.3	123	4.9
<i>Chronic renal failure</i>	249	18.7	535	21.2
<i>Dialysis</i>	24	1.8	52	2.1
<i>Respiratory failure</i>	73	5.5	131	5.2
<i>HIV Infection</i>	0	0.0	7	0.3
<i>Autoimmune diseases</i>	77	5.8	73	2.9
<i>Obesity</i>	147	11.0	272	10.8
Number of comorbidities				
<i>0 comorbidities</i>	34	2.5	119	4.7
<i>1 comorbidity</i>	171	12.8	370	14.7
<i>2 comorbidities</i>	273	20.4	523	20.7
<i>3 comorbidities and over</i>	857	64.2	1510	59.9

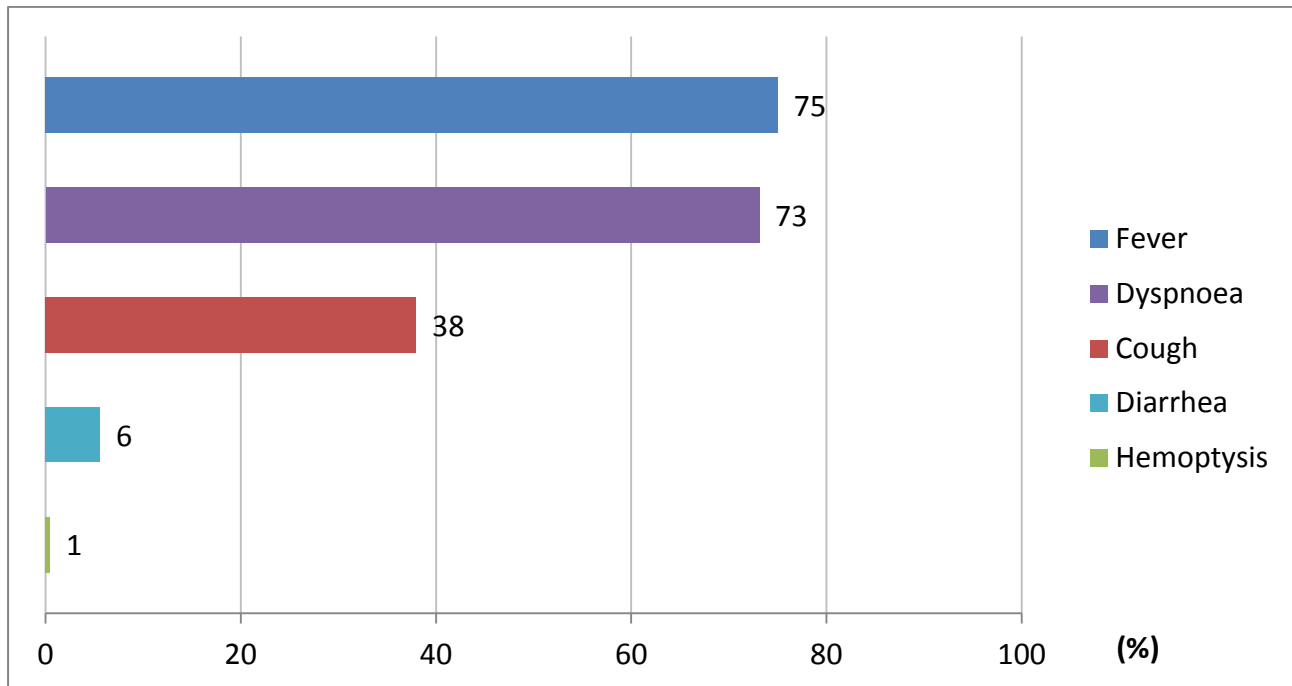
4. Diagnosis of hospitalization

In 91.8% of hospitalizations, conditions (e.g. pneumonia, respiratory failure) or symptoms (e.g. fever, dyspnoea, cough) compatible with SARS-CoV-2 were mentioned. In 290 cases (8.2% of cases) the diagnosis of hospitalization was not related to the infection. In 43 cases the diagnosis of hospitalization concerned exclusively neoplastic pathologies, in 100 cases cardiovascular pathologies (for example Acute Myocardial Infarction-AMI, heart failure, stroke), in 39 cases gastrointestinal pathologies (for example cholecystitis, perforation of the intestine, intestinal obstruction, cirrhosis), in 108 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, 6.4% 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 (96.0% of cases), followed by acute renal failure (22.6%). Superinfection was observed in 15.3% and acute cardiac injury in 10.7% of cases.

7. Treatments

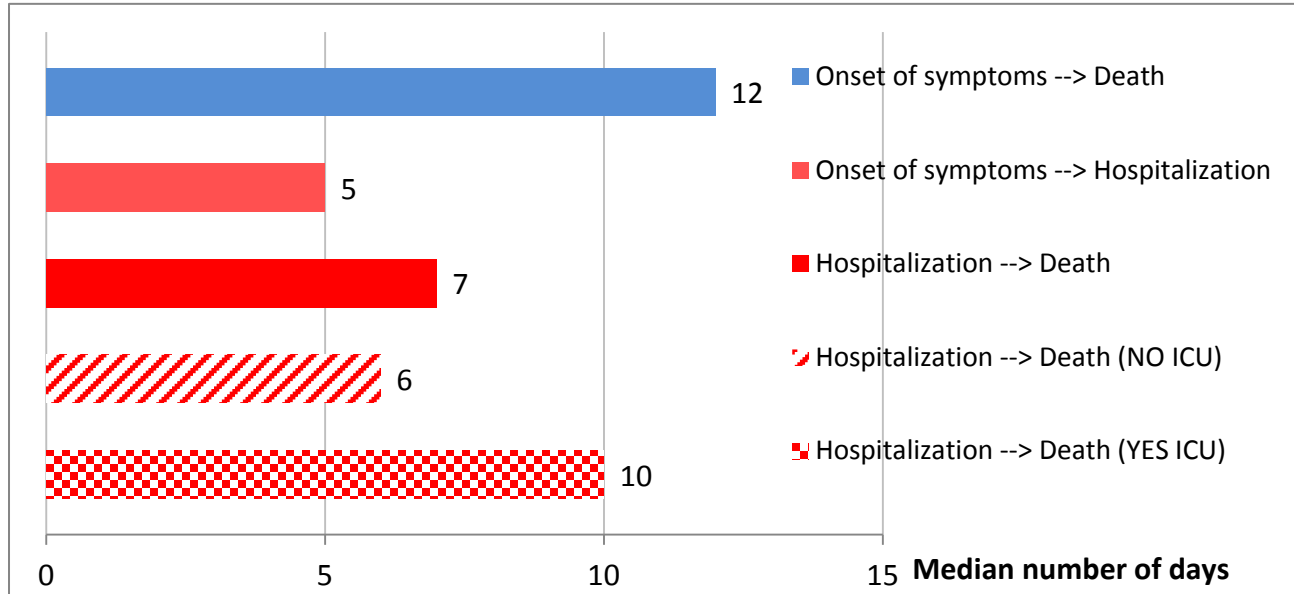
Antibiotics were used by 86.0% of patients during hospital stay, while less used were antivirals (58.9%) and corticosteroids (40.0%). Concomitant use of these 3 treatments was observed in 24.4% of cases.

Out of SARS-CoV-2 positive deceased patients, 4.3% 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 (12 days), from the onset of symptoms to hospitalization (5 days) and from hospitalization to death (7 days). The time from hospitalization to death was 4 days longer in those who were transferred to intensive care than those who were not transferred (10 days vs. 6 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 July 9th, 385 out of the 34,026 (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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