



Characteristics of SARS-CoV-2 patients dying in Italy Report based on available data on May 7th, 2020

1. Sample

The present report describes characteristics of 27,955 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 May 7th, 2020.

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

REGION	N	%
Lombardia	14,611	52.3
Emilia Romagna	3,737	13.4
Piemonte	2,194	7.8
Veneto	1,596	5.7
Liguria	1,073	3.8
Toscana	845	3.0
Marche	629	2.3
Lazio	451	1.6
Puglia	441	1.6
Trento	438	1.6
Campania	312	1.1
Friuli Venezia Giulia	312	1.1
Abruzzo	309	1.1
Bolzano	288	1.0
Sicilia	257	0.9
Valle d'Aosta	139	0.5
Sardegna	126	0.5
Calabria	79	0.3
Umbria	71	0.3
Basilicata	24	0.1
Molise	23	0.1
Total	27,955	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 81, range 0-100, IQR 74 -87). Women were 10,936 (39.1%). *Figure 1* shows that median age of patients dying for SARS-CoV-2 infection was about 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

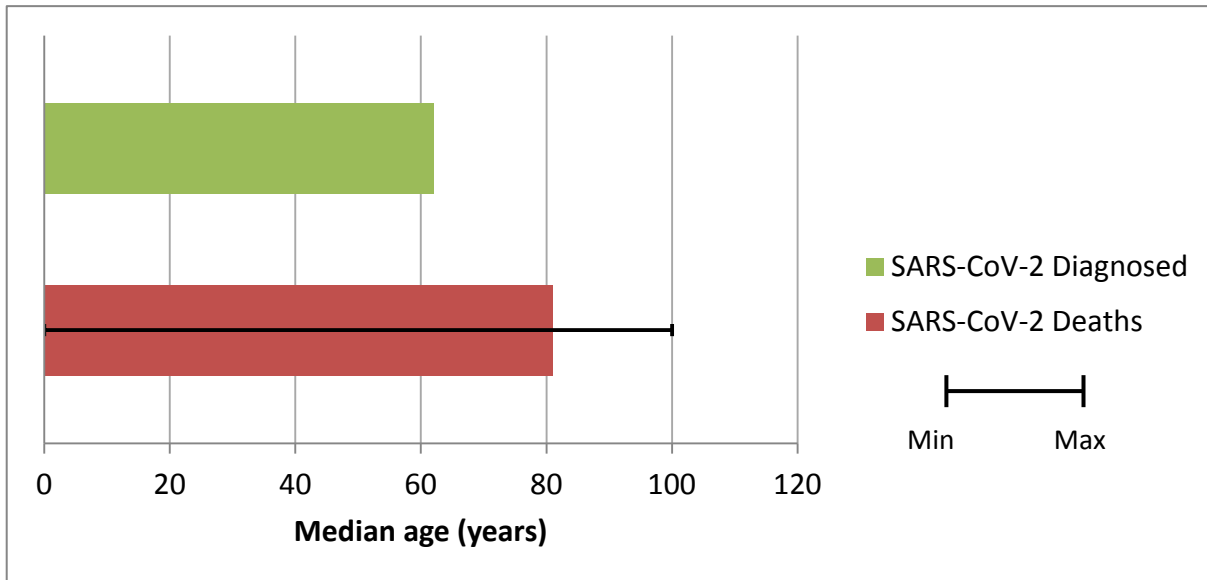
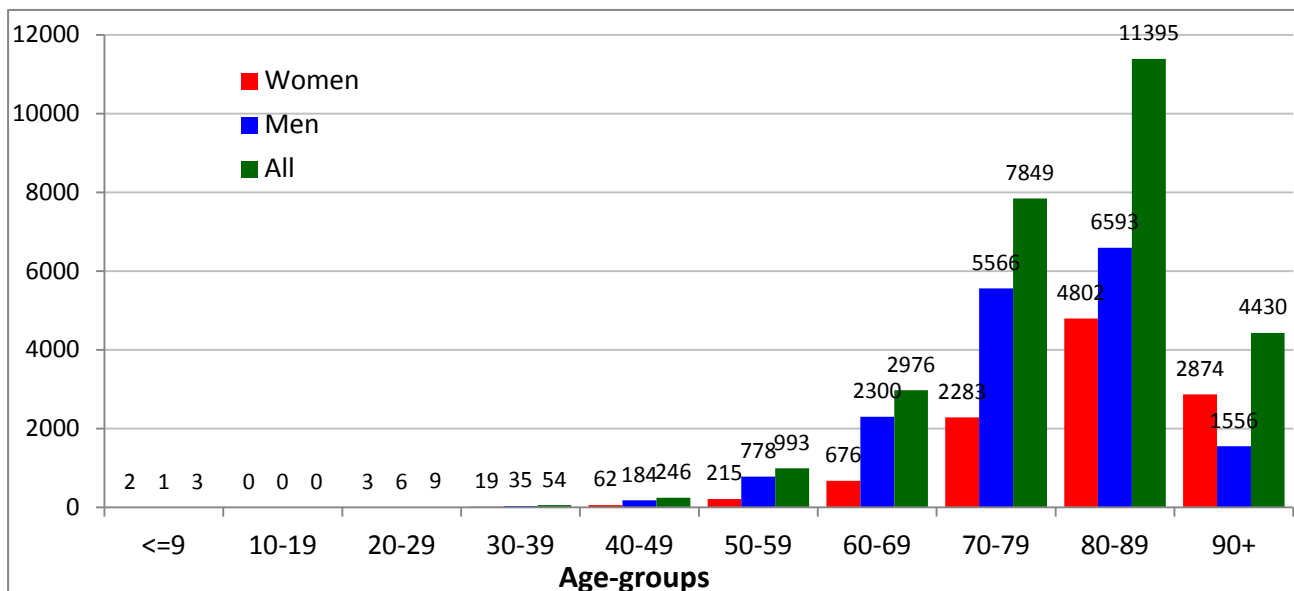


Figure 2. Absolute number of deaths by age group



3. Pre-existing conditions

Table 1 presents most common comorbidities diagnosed before SARS-CoV-2 infection. Data on diseases were based on chart review and was available on 2,621 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, 3.9% of the sample presented with a no comorbidities, 15.0% with a single comorbidity, 21.3% with 2, and 59.9% with 3 or more.

Before hospitalization, 24% of SARS-CoV-2 positive deceased patients followed ACE-inhibitor therapy and 17% 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 SARS-CoV-2 positive deceased patients

Diseases	N	%
<i>Ischemic heart disease</i>	745	28.4
<i>Atrial Fibrillation</i>	584	22.3
<i>Heart failure</i>	427	16.3
<i>Stroke</i>	276	10.5
<i>Hypertension</i>	1788	68.2
<i>Type 2-Diabetes</i>	814	31.1
<i>Dementia</i>	415	15.8
<i>COPD (Chronic Obstructive Pulmonary Disease)</i>	435	16.6
<i>Active cancer in the past 5 years</i>	419	16.0
<i>Chronic liver disease</i>	104	4.0
<i>Chronic renal failure</i>	533	20.3
<i>Dialysis</i>	48	1.8
<i>Respiratory failure</i>	134	5.1
<i>HIV Infection</i>	6	0.2
<i>Autoimmune diseases</i>	101	3.9
<i>Obesity</i>	288	11.0
Number of comorbidities		
<i>0 comorbidities</i>	101	3.9
<i>1 comorbidity</i>	393	15.0
<i>2 comorbidities</i>	558	21.3
<i>3 comorbidities and over</i>	1569	59.9

Table 3 presents the most common pre-existing chronic pathologies in patients who died, separately in men (n = 1,771) and women (n = 850). 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 1.9).

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

	Women		Men	
Diseases	N	%	N	%
<i>Ischemic heart disease</i>	179	21.1	566	32.0
<i>Atrial Fibrillation</i>	199	23.4	385	21.7
<i>Heart Failure</i>	163	18.5	264	14.6
<i>Stroke</i>	90	10.6	186	10.5
<i>Hypertension</i>	596	70.1	1192	67.3
<i>Type 2-Diabetes</i>	258	30.4	556	31.4
<i>Dementia</i>	196	23.1	219	12.4
<i>COPD (Chronic Obstructive Pulmonary Disease)</i>	109	12.8	326	18.4
<i>Active cancer in the past 5 years</i>	131	15.4	288	16.3
<i>Chronic liver disease</i>	22	2.6	82	4.6
<i>Chronic renal failure</i>	154	18.1	379	21.4
<i>Dialysis</i>	15	1.8	33	1.9
<i>Respiratory failure</i>	41	4.8	93	5.3
<i>HIV Infection</i>	0	0.0	6	0.3
<i>Autoimmune diseases</i>	53	6.2	48	2.7
<i>Obesity</i>	102	12.0	186	10.5
Number of comorbidities				
<i>0 comorbidities</i>	20	2.4	81	4.6
<i>1 comorbidity</i>	119	14.0	274	15.5
<i>2 comorbidities</i>	187	22.0	371	20.9
<i>3 comorbidities and over</i>	524	61.6	1045	59.0

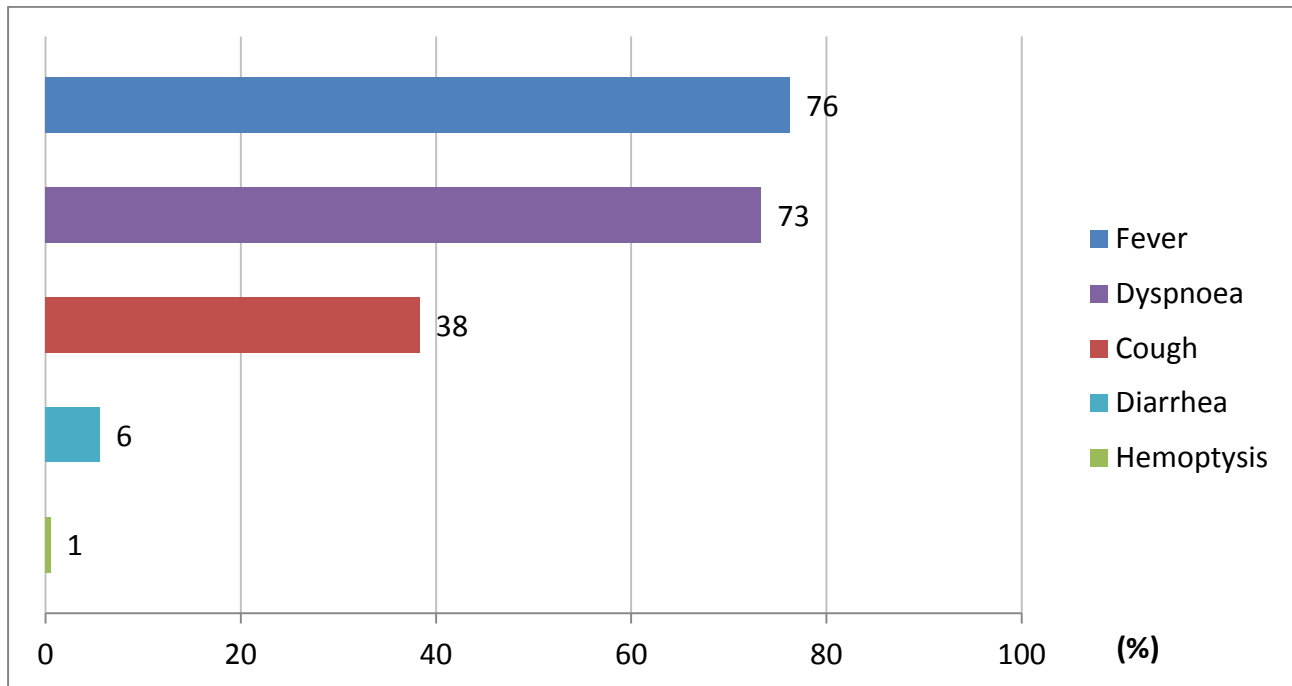
4. Diagnosis of hospitalization

In 92.5% of hospitalizations, conditions (e.g. pneumonia, respiratory failure) or symptoms (e.g. fever, dyspnoea, cough) compatible with SARS-CoV-2 were mentioned. In 184 cases (7.5% of cases) the diagnosis of hospitalization was not related to the infection. In 20 cases the diagnosis of hospitalization concerned exclusively neoplastic pathologies, in 74 cases cardiovascular pathologies (for example Acute Myocardial Infarction-AMI, heart failure, stroke), in 24 cases gastrointestinal pathologies (for example cholecystitis, perforation of the intestine, intestinal obstruction, cirrhosis), in 66 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, 5.8% 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 (97.0% of cases), followed by acute renal failure (22.6%). Superinfection was observed in 12.4% and acute cardiac injury in 10.8% of cases.

7. Treatments

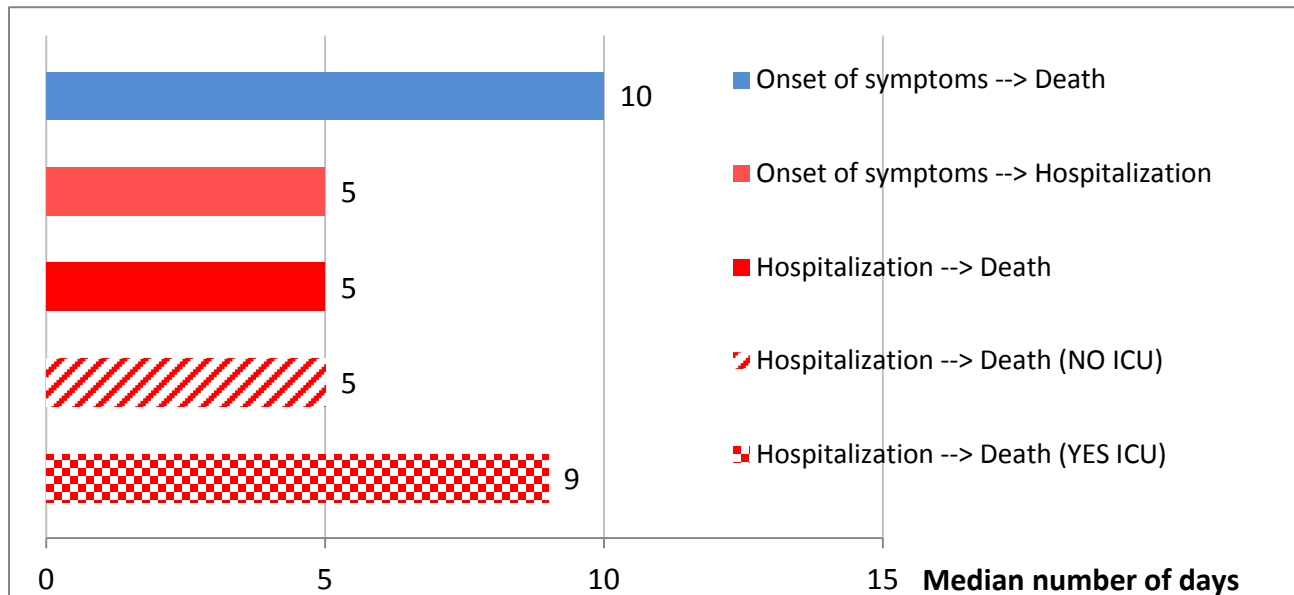
Antibiotics were used by 85% of patients during hospital stay, while less used were antivirals (57%) and corticosteroids (37%). Concomitant use of these 3 treatments was observed in 21.6% of cases.

Out of SARS-CoV-2 positive deceased patients, 4.2% 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 (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 4 days longer in those who were transferred to intensive care than those who were not transferred (9 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 May 7th, 312 out of the 27,955 (1.1%) positive SARS-CoV-2 patients under the age of 50 died. In particular, 66 of these were less than 40 years (42 men and 24 women), age range between 0 and 39 years. For 14 patients under the age of 40 years no clinical information is available; the remaining 40 had serious pre-existing pathologies (cardiovascular, renal, psychiatric pathologies, diabetes, obesity) and 12 had no major pathologies.

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

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