



Characteristics of SARS-CoV-2 patients dying in Italy Report based on available data on April 29th, 2020

1. Sample

The present report describes characteristics of 25,452 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 April 29th, 2020.

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

REGION	N	%
Lombardia	13,685	53.8
Emilia Romagna	3,458	13.6
Piemonte	2,095	8.2
Veneto	1,445	5.7
Liguria	678	2.7
Toscana	655	2.6
Marche	598	2.3
P.A. Trento	412	1.6
Puglia	410	1.6
Lazio	397	1.6
Friuli Venezia Giulia	279	1.1
P.A. Bolzano	274	1.1
Campania	245	1.0
Sicilia	217	0.9
Abruzzo	157	0.6
Valle d'Aosta	137	0.5
Sardegna	120	0.5
Calabria	74	0.3
Umbria	71	0.3
Basilicata	24	0.1
Molise	21	0.1
Total	25,452	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 79 years (median 81, range 0-100, IQR 73 -87). Women were 9,684 (38.0%). *Figure 1* shows that median age of patients dying for SARS-CoV-2 infection was more than 15 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 84 - median age men 79).

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

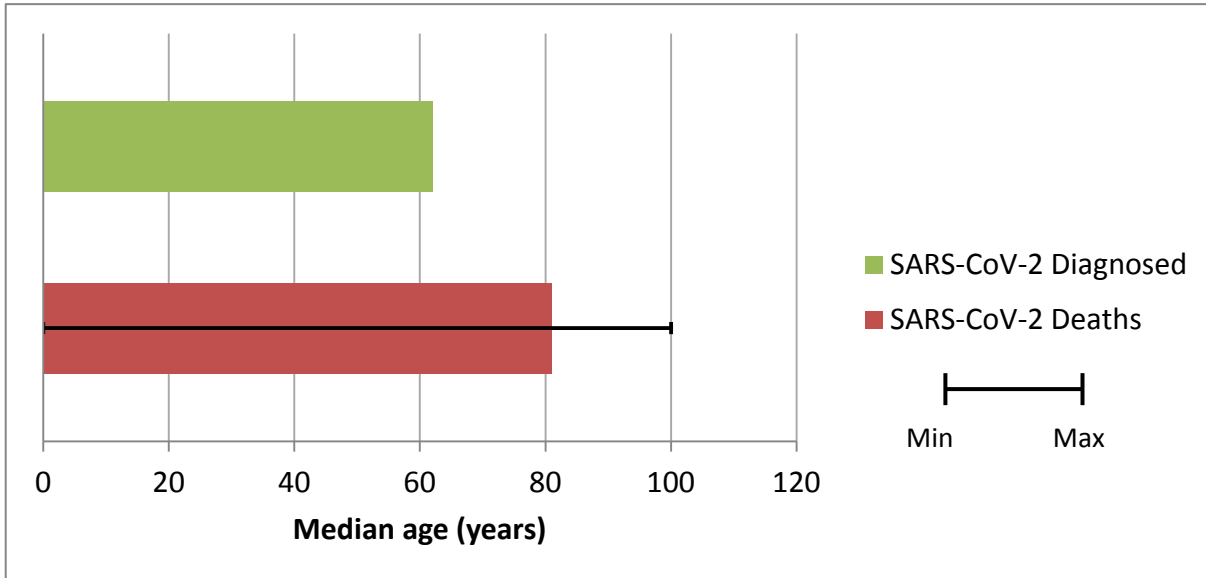
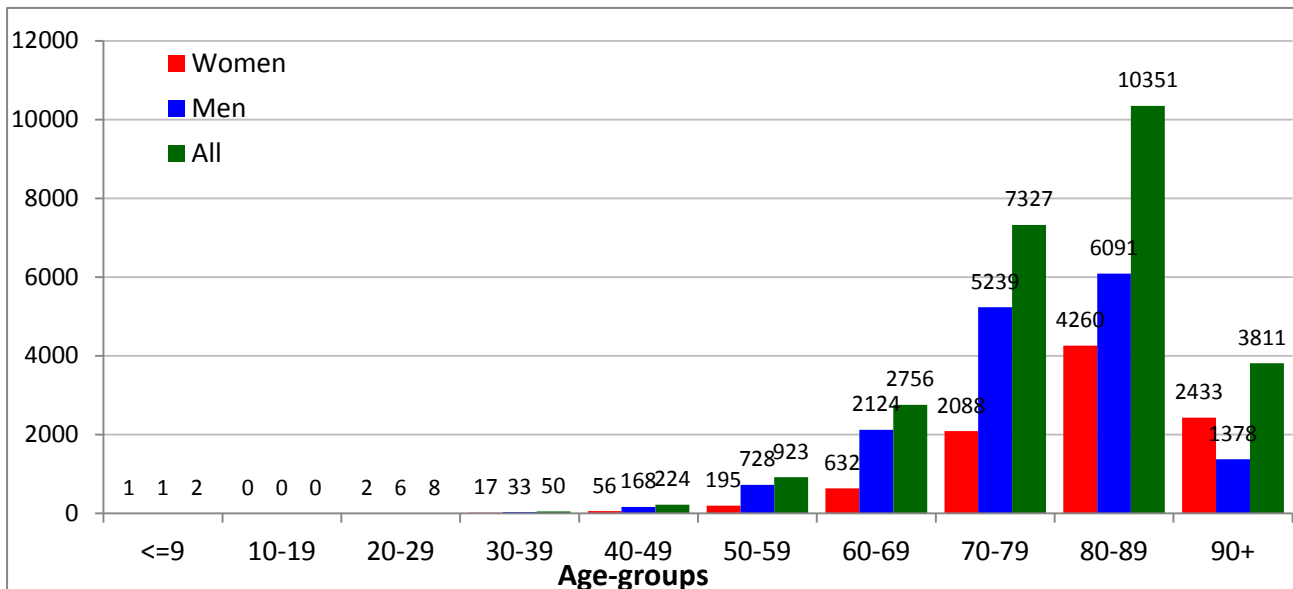


Figure 2. Absolute number of deaths by age group



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 2,351 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, 3.8% of the sample presented with a no comorbidities, 14.5% with a single comorbidity, 21.4% with 2, and 60.3% with 3 or more.

Before hospitalization, 24% 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 1. Most common comorbidities observed in SARS-CoV-2 positive deceased patients

Diseases	N	%
<i>Ischemic heart disease</i>	662	28.2
<i>Atrial Fibrillation</i>	518	22.0
<i>Heart failure</i>	386	16.4
<i>Stroke</i>	255	10.8
<i>Hypertension</i>	1627	69.2
<i>Type 2-Diabetes</i>	747	31.8
<i>Dementia</i>	357	15.2
<i>COPD (Chronic Obstructive Pulmonary Disease)</i>	398	16.9
<i>Active cancer in the past 5 years</i>	383	16.3
<i>Chronic liver disease</i>	94	4.0
<i>Chronic renal failure</i>	494	21.0
<i>Dialysis</i>	46	2.0
<i>Respiratory failure</i>	119	5.1
<i>HIV Infection</i>	6	0.3
<i>Autoimmune diseases</i>	89	3.8
<i>Obesity</i>	272	11.6
Number of comorbidities		
<i>0 comorbidities</i>	90	3.8
<i>1 comorbidity</i>	340	14.5
<i>2 comorbidities</i>	504	21.4
<i>3 comorbidities and over</i>	1417	60.3

Table 3 presents the most common pre-existing chronic pathologies in patients who died, separately in men (n = 1,587) and women (n = 764). 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>	164	21.5	498	31.4
<i>Atrial Fibrillation</i>	179	23.4	339	21.4
<i>Heart Failure</i>	150	19.0	236	14.6
<i>Stroke</i>	85	11.1	170	10.7
<i>Hypertension</i>	551	72.1	1076	67.8
<i>Type 2-Diabetes</i>	240	31.4	507	31.9
<i>Dementia</i>	166	21.7	191	12.0
<i>COPD (Chronic Obstructive Pulmonary Disease)</i>	97	12.7	301	19.0
<i>Active cancer in the past 5 years</i>	119	15.6	264	16.6
<i>Chronic liver disease</i>	19	2.5	75	4.7
<i>Chronic renal failure</i>	143	18.7	351	22.1
<i>Dialysis</i>	14	1.8	32	2.0
<i>Respiratory failure</i>	35	4.6	84	5.3
<i>HIV Infection</i>	0	0.0	6	0.4
<i>Autoimmune diseases</i>	49	6.4	40	2.5
<i>Obesity</i>	97	12.7	175	11.0
Number of comorbidities				
<i>0 comorbidities</i>	18	2.4	72	4.5
<i>1 comorbidity</i>	104	13.6	236	14.9
<i>2 comorbidities</i>	166	21.7	338	21.3
<i>3 comorbidities and over</i>	476	62.3	941	59.3

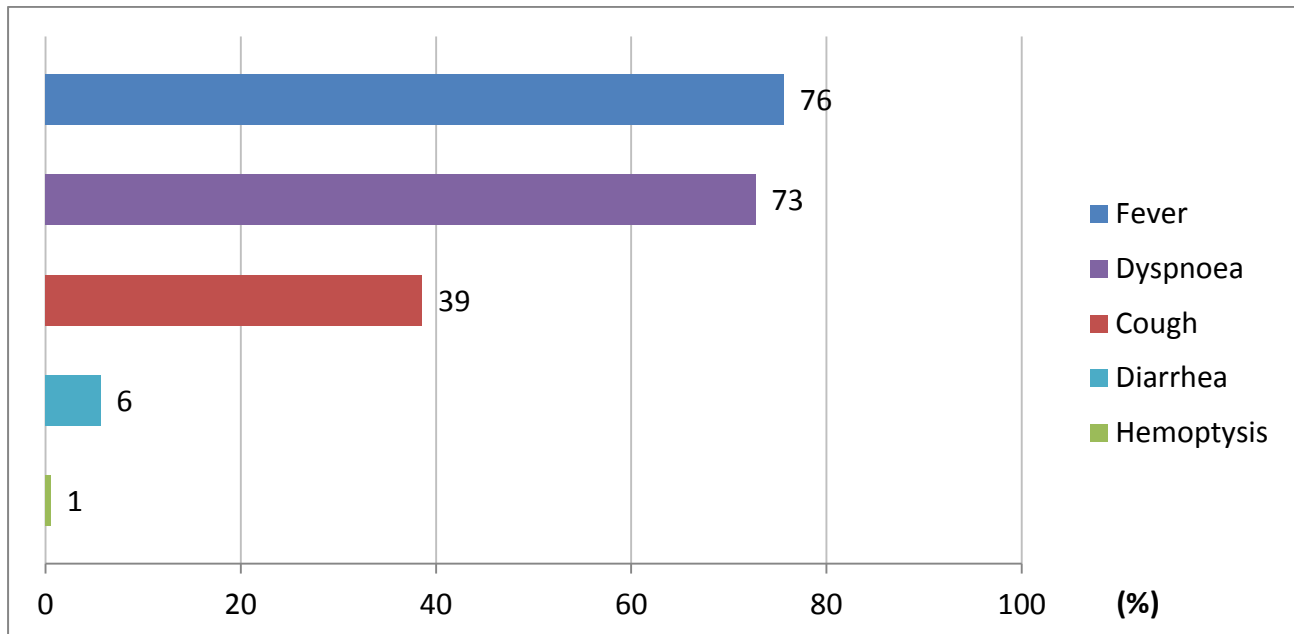
4. Diagnosis of hospitalization

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 166 cases (7.5% of cases) the diagnosis of hospitalization was not related to the infection. In 17 cases the diagnosis of hospitalization concerned exclusively neoplastic pathologies, in 68 cases cardiovascular pathologies (for example Acute Myocardial Infarction-AMI, heart failure, stroke), in 23 cases gastrointestinal pathologies (for example cholecystitis, perforation of the intestine, intestinal obstruction, cirrhosis), in 58 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 (97.1% of cases), followed by acute renal failure (23.3%). Superinfection was observed in 12.6% and acute cardiac injury in 10.9% of cases.

7. Treatments

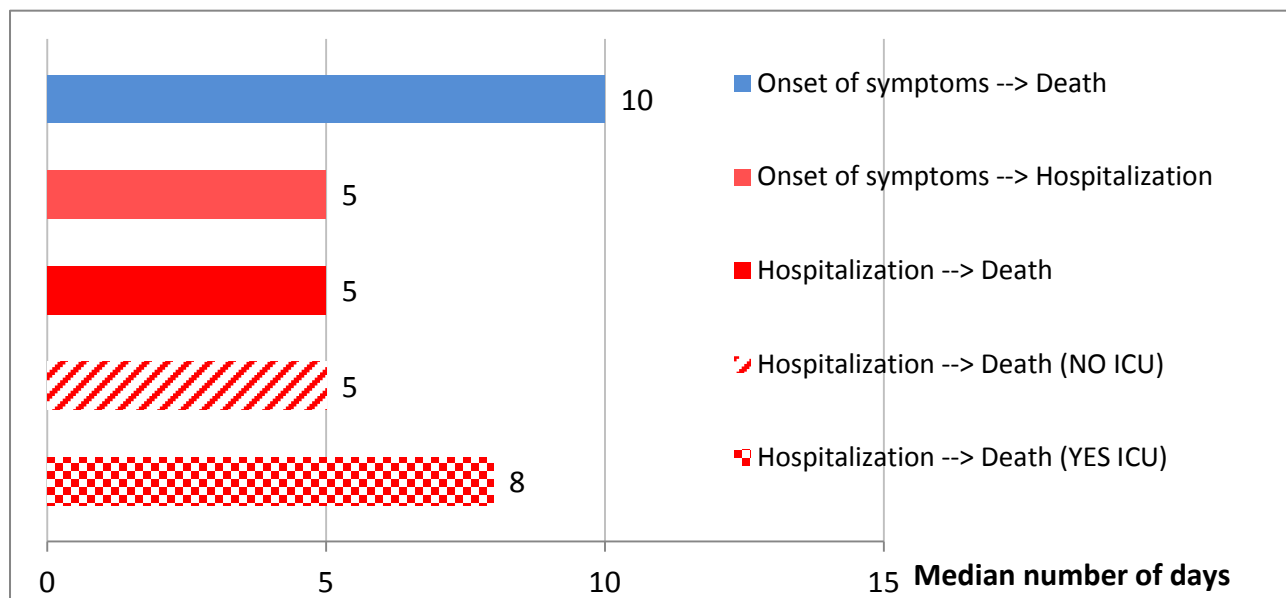
Antibiotics were used by 85% of patients during hospital stay, while less used were antivirals (57%) and corticosteroids (37%). Concomitant use of these 3 treatments was observed in 21.0% of cases.

Out of SARS-CoV-2 positive deceased patients, 4.4% 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 3 days longer in those who were transferred to intensive care than those who were not transferred (8 days vs. 4 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 April 29th, 284 out of the 25,452 (1.1%) positive SARS-CoV-2 patients under the age of 50 died. In particular, 59 of these were less than 40 years (39 men and 20 women), age range between 0 and 39 years. For 9 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 10 had no major pathologies.

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

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