



Characteristics of SARS-CoV-2 patients dying in Italy Report based on available data on April 20th, 2020

1. Sample

The present report describes characteristics of 21,551 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 20th, 2020.

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

REGION	N	%
Lombardia	12,061	56.0
Emilia Romagna	3,009	14.0
Piemonte	1,727	8.0
Veneto	1,114	5.2
Liguria	531	2.5
Marche	490	2.3
Toscana	446	2.1
Trento	360	1.7
Puglia	322	1.5
Lazio	271	1.3
Bolzano	249	1.2
Friuli Venezia Giulia	220	1.0
Campania	162	0.8
Sicilia	157	0.7
Valle d'Aosta	146	0.7
Sardegna	88	0.4
Umbria	63	0.3
Calabria	52	0.2
Abruzzo	42	0.2
Basilicata	23	0.1
Molise	18	0.1
Total	21,551	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 80, range 0-100, IQR 73 -86). Women were 7,706 (35.8%). *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

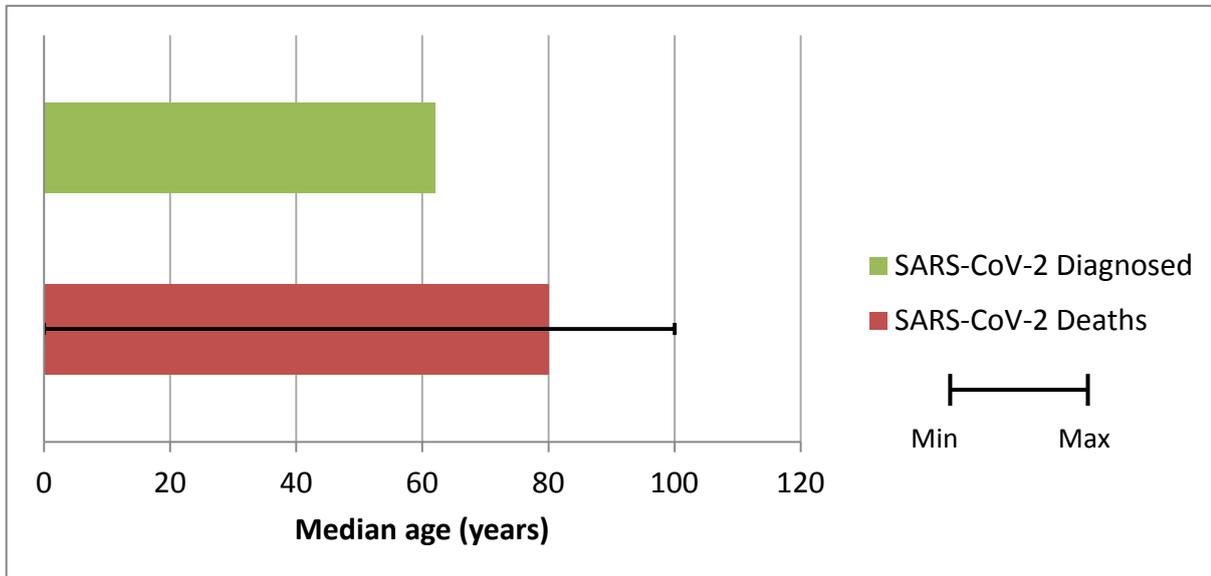
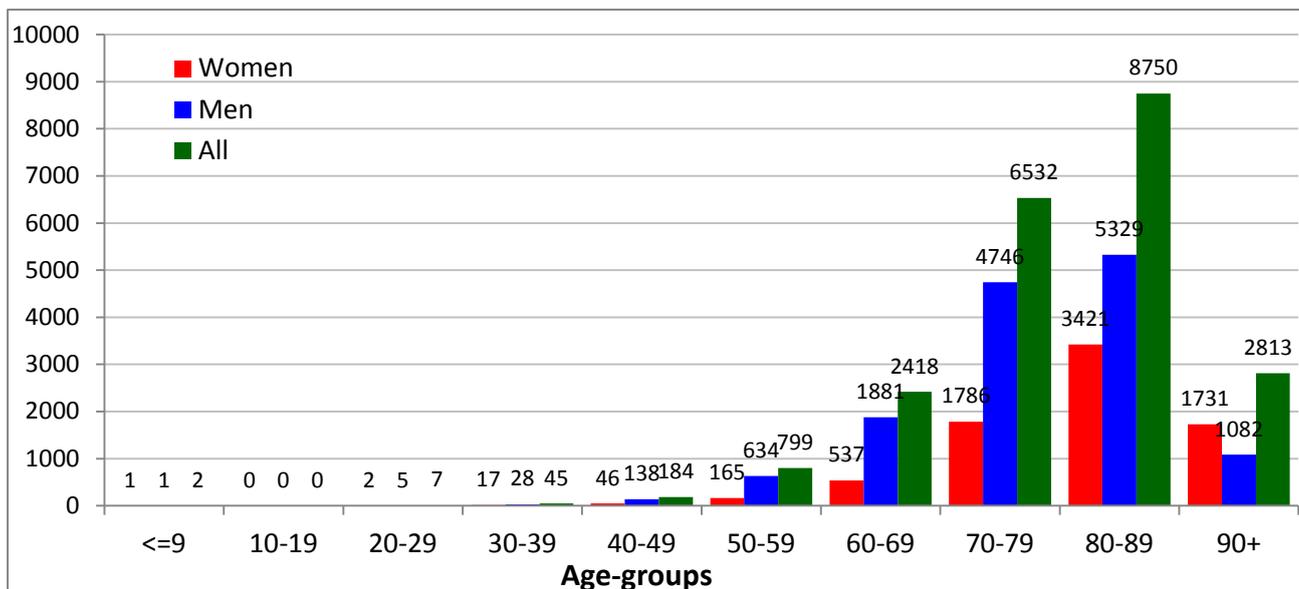


Figure 2. Absolute number of deaths by age group



Note: For 1 deceased person age was not possible to be evaluated

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 1,890 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, 3.7% of the sample presented with a no comorbidities, 14.4% with a single comorbidity, 21.2% with 2, and 60.7% 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>	518	27.4
<i>Atrial Fibrillation</i>	411	21.7
<i>Heart failure</i>	298	15.8
<i>Stroke</i>	206	10.9
<i>Hypertension</i>	1317	69.7
<i>Type 2-Diabetes</i>	603	31.9
<i>Dementia</i>	280	14.8
<i>COPD (Chronic Obstructive Pulmonary Disease)</i>	327	17.3
<i>Active cancer in the past 5 years</i>	301	15.9
<i>Chronic liver disease</i>	72	3.8
<i>Chronic renal failure</i>	405	21.4
<i>Dialysis</i>	38	2.0
<i>Respiratory failure</i>	102	5.4
<i>HIV Infection</i>	5	0.3
<i>Autoimmune diseases</i>	66	3.5
<i>Obesity</i>	230	12.2
Number of comorbidities		
<i>0 comorbidities</i>	70	3.7
<i>1 comorbidity</i>	273	14.4
<i>2 comorbidities</i>	400	21.2
<i>3 comorbidities and over</i>	1147	60.7

Table 3 presents the most common pre-existing chronic pathologies in patients who died, separately in men (n = 1,287) and women (n = 603). 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>	120	19.9	398	30.9
<i>Atrial Fibrillation</i>	141	23.4	270	21.0
<i>Heart Failure</i>	117	18.8	181	13.8
<i>Stroke</i>	64	10.6	142	11.0
<i>Hypertension</i>	441	73.1	876	68.1
<i>Type 2-Diabetes</i>	188	31.2	415	32.2
<i>Dementia</i>	122	20.2	158	12.3
<i>COPD (Chronic Obstructive Pulmonary Disease)</i>	74	12.3	253	19.7
<i>Active cancer in the past 5 years</i>	96	15.9	205	15.9
<i>Chronic liver disease</i>	16	2.7	56	4.4
<i>Chronic renal failure</i>	112	18.6	293	22.8
<i>Dialysis</i>	13	2.2	25	1.9
<i>Respiratory failure</i>	29	4.8	73	5.7
<i>HIV Infection</i>	0	0.0	5	0.4
<i>Autoimmune diseases</i>	33	5.5	33	2.6
<i>Obesity</i>	82	13.6	148	11.5
Number of comorbidities				
<i>0 comorbidities</i>	12	2.0	58	4.5
<i>1 comorbidity</i>	81	13.4	192	14.9
<i>2 comorbidities</i>	136	22.6	264	20.5
<i>3 comorbidities and over</i>	374	62.0	773	60.1

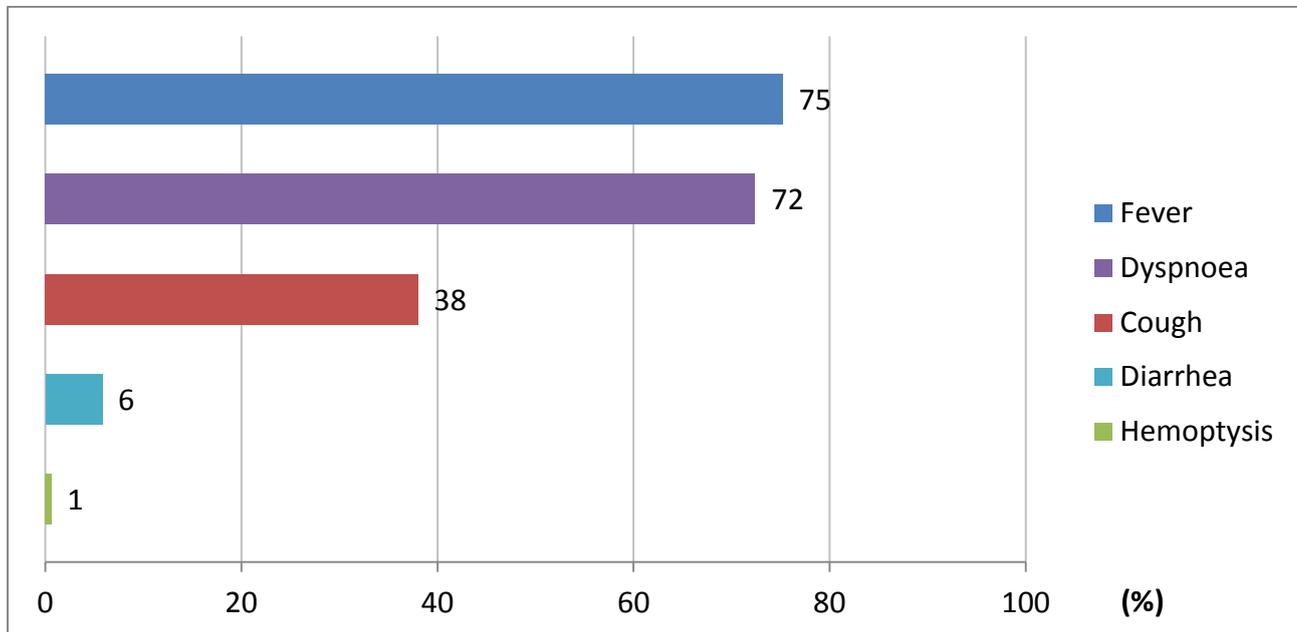
4. Diagnosis of hospitalization

In 92.6% of hospitalizations, conditions (e.g. pneumonia, respiratory failure) or symptoms (e.g. fever, dyspnoea, cough) compatible with SARS-CoV-2 were mentioned. In 132 cases (7.3% of cases) the diagnosis of hospitalization was not related to the infection. In 13 cases the diagnosis of hospitalization concerned exclusively neoplastic pathologies, in 57 cases cardiovascular pathologies (for example Acute Myocardial Infarction-AMI, heart failure, stroke), in 18 cases gastrointestinal pathologies (for example cholecystitis, perforation of the intestine, intestinal obstruction, cirrhosis), in 44 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 (96.7% of cases), followed by acute renal failure (22.6%). Superinfection was observed in 12.7% and acute cardiac injury in 9.3% of cases.

7. Treatments

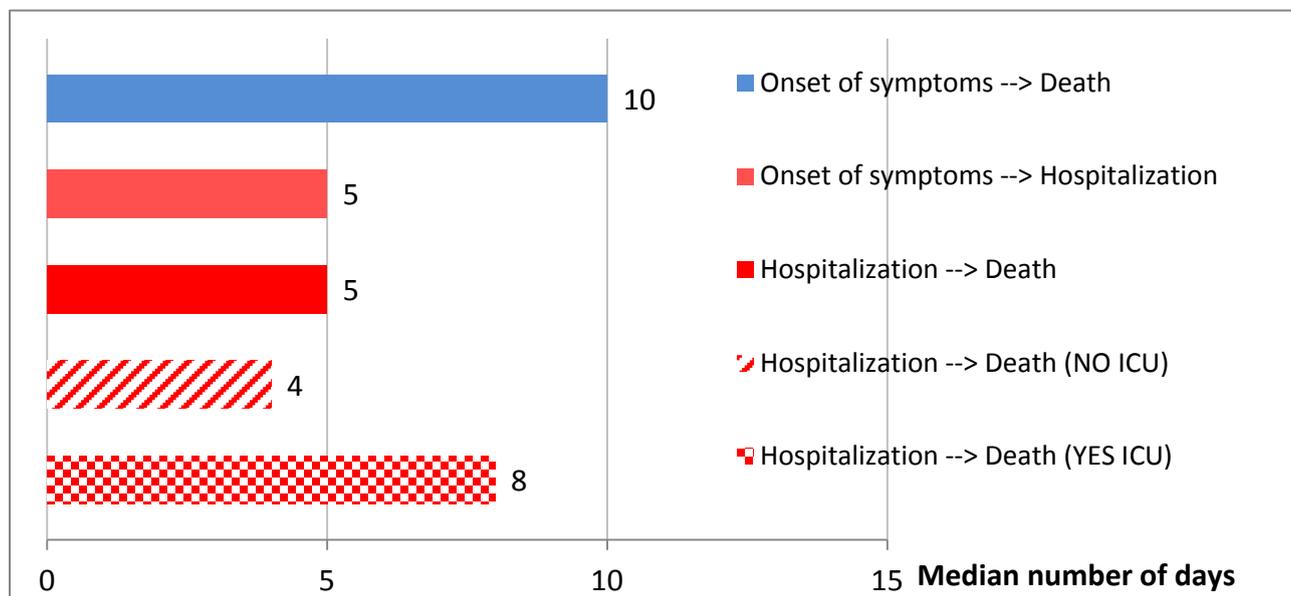
Antibiotics were used by 84% of patients during hospital stay, while less used were antivirals (56%) and corticosteroids (36%). Concomitant use of these 3 treatments was observed in 20.1% of cases.

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 (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 (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 20th, 238 out of the 21,551 (1.1%) positive SARS-CoV-2 patients under the age of 50 died. In particular, 54 of these were less than 40 years (34 men and 20 women), age range between 0 and 39 years. For 6 patients under the age of 40 years no clinical information is available; the remaining 38 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

Members of the SARS-CoV-2 Surveillance Group

Luigi Palmieri, Xanthi Andrianou, Pierfrancesco Barbariol, Antonino Bella, Stefania Bellino, Eva Benelli, Luigi Bertinato, Stefano Boros, Gianfranco Brambilla, Giovanni Calcagnini, Marco Canevelli, Maria Rita Castrucci, Federica Censi, Alessandra Ciervo, Elisa Colaizzo, Fortunato D'Ancona, Martina Del Manso, Chiara Donfrancesco, Massimo Fabiani, Antonietta Fila, Marco Florida, Marina Giuliano, Tiziana Grisetti, Martin Langer, Ilaria Lega, Cinzia Lo Noce, Pietro Maiozzi, Fiorella Malchiodi Albedi, Valerio Manno, Margherita Martini, Alberto Mateo Urdiales, Eugenio Mattei, Claudia Meduri, Paola Meli, Giada Minelli, Manuela Nebuloni, Lorenza Nisticò, Marino Nonis, Graziano Onder, Lucia Palmisano, Nicola Petrosillo, Patrizio Pezzotti, Flavia Pricci, Ornella Punzo, Vincenzo Puro, Valeria Raparelli, Giovanni Rezza, Flavia Riccardo, Maria Cristina Rota, Paolo Salerno, Debora Serra, Andrea Siddu, Paola Stefanelli, Manuela Tamburo De Bella, Dorina Tiple, Brigid Unim, Luana Vaianella, Nicola Vanacore, Monica Vichi, Emanuele Rocco Villani, Silvio Brusafferro.