



Characteristics of SARS-CoV-2 patients dying in Italy Report based on available data on May 14th , 2020

1. Sample

The present report describes characteristics of 29,692 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 14th, 2020.

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

REGION	N	%
Lombardia	15,185	51.1
Emilia Romagna	3,905	13.2
Piemonte	2,196	7.4
Veneto	1,746	5.9
Liguria	1,277	4.3
Toscana	928	3.1
Marche	905	3.0
Lazio	572	1.9
Puglia	461	1.6
Trento	449	1.5
Campania	366	1.2
Friuli Venezia Giulia	346	1.2
Abruzzo	323	1.1
Bolzano	291	1.0
Sicilia	266	0.9
Valle d'Aosta	143	0.5
Sardegna	127	0.4
Calabria	84	0.3
Umbria	74	0.2
Basilicata	26	0.1
Molise	22	0.1
Total	29,692	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 11,814 (39,8%). *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

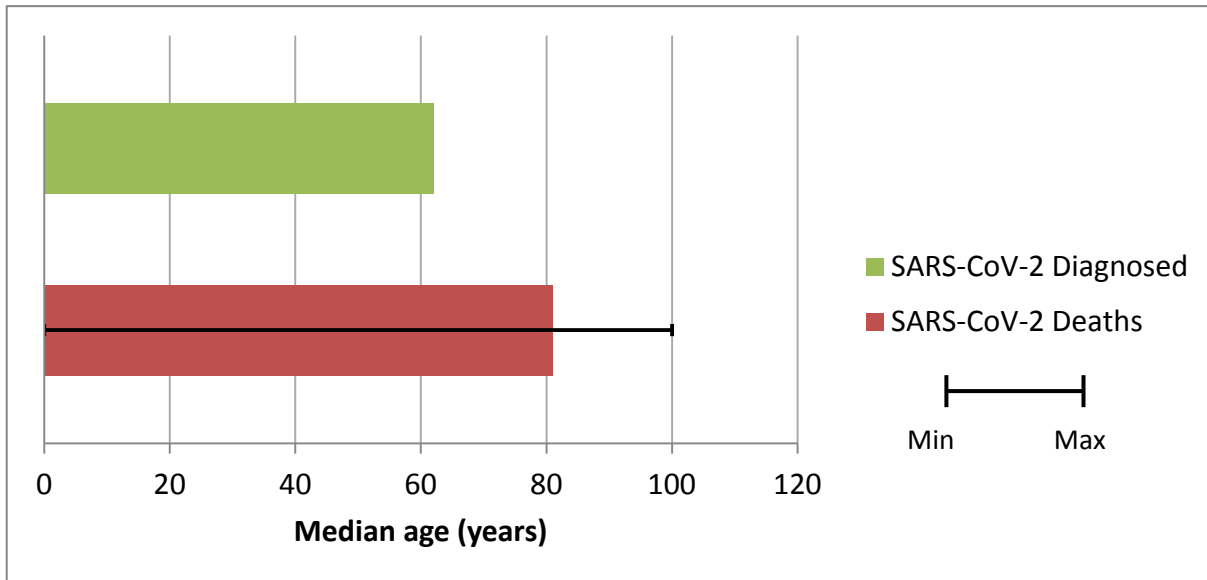
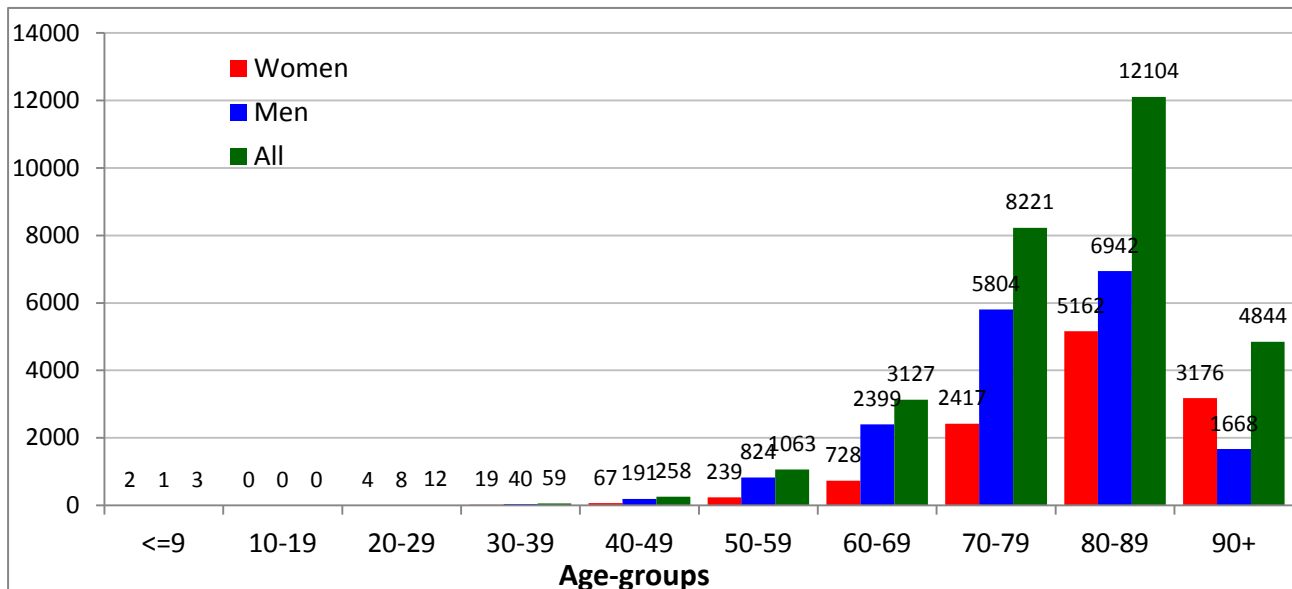


Figure 2. Absolute number of deaths by age group



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 2,848 patients dying in-hospital for whom it was possible to analyse clinic charts. Mean number of diseases was 3.2 (median 3, SD 1.9). Overall, 3.9% of the sample presented with a no comorbidities, 14.9% with a single comorbidity, 21.3% with 2, and 59.8% 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 1. Most common comorbidities observed in SARS-CoV-2 positive deceased patients

Diseases	N	%
<i>Ischemic heart disease</i>	804	28.2
<i>Atrial Fibrillation</i>	642	22.5
<i>Heart failure</i>	457	16.0
<i>Stroke</i>	301	10.6
<i>Hypertension</i>	1940	68.1
<i>Type 2-Diabetes</i>	870	30.5
<i>Dementia</i>	450	15.8
<i>COPD (Chronic Obstructive Pulmonary Disease)</i>	470	16.5
<i>Active cancer in the past 5 years</i>	454	15.9
<i>Chronic liver disease</i>	113	4.0
<i>Chronic renal failure</i>	585	20.5
<i>Dialysis</i>	53	1.9
<i>Respiratory failure</i>	142	5.0
<i>HIV Infection</i>	6	0.2
<i>Autoimmune diseases</i>	108	3.8
<i>Obesity</i>	307	10.8
Number of comorbidities		
<i>0 comorbidities</i>	111	3.9
<i>1 comorbidity</i>	425	14.9
<i>2 comorbidities</i>	608	21.3
<i>3 comorbidities and over</i>	1704	59.8

Table 3 presents the most common pre-existing chronic pathologies in patients who died, separately in men (n = 1,909) and women (n = 939). The average number of pathologies observed in women is 3.3 (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>	200	21.3	604	31.6
<i>Atrial Fibrillation</i>	223	23.7	419	21.9
<i>Heart Failure</i>	178	18.4	279	14.3
<i>Stroke</i>	103	11.0	198	10.4
<i>Hypertension</i>	657	70.0	1283	67.2
<i>Type 2-Diabetes</i>	276	29.4	594	31.1
<i>Dementia</i>	217	23.1	233	12.2
<i>COPD (Chronic Obstructive Pulmonary Disease)</i>	119	12.7	351	18.4
<i>Active cancer in the past 5 years</i>	144	15.3	310	16.2
<i>Chronic liver disease</i>	26	2.8	87	4.6
<i>Chronic renal failure</i>	175	18.6	410	21.5
<i>Dialysis</i>	16	1.7	37	1.9
<i>Respiratory failure</i>	45	4.8	97	5.1
<i>HIV Infection</i>	0	0.0	6	0.3
<i>Autoimmune diseases</i>	57	6.1	51	2.7
<i>Obesity</i>	108	11.5	199	10.4
Number of comorbidities				
<i>0 comorbidities</i>	22	2.3	89	4.7
<i>1 comorbidity</i>	132	14.1	293	15.3
<i>2 comorbidities</i>	207	22.0	401	21.0
<i>3 comorbidities and over</i>	578	61.6	1126	59.0

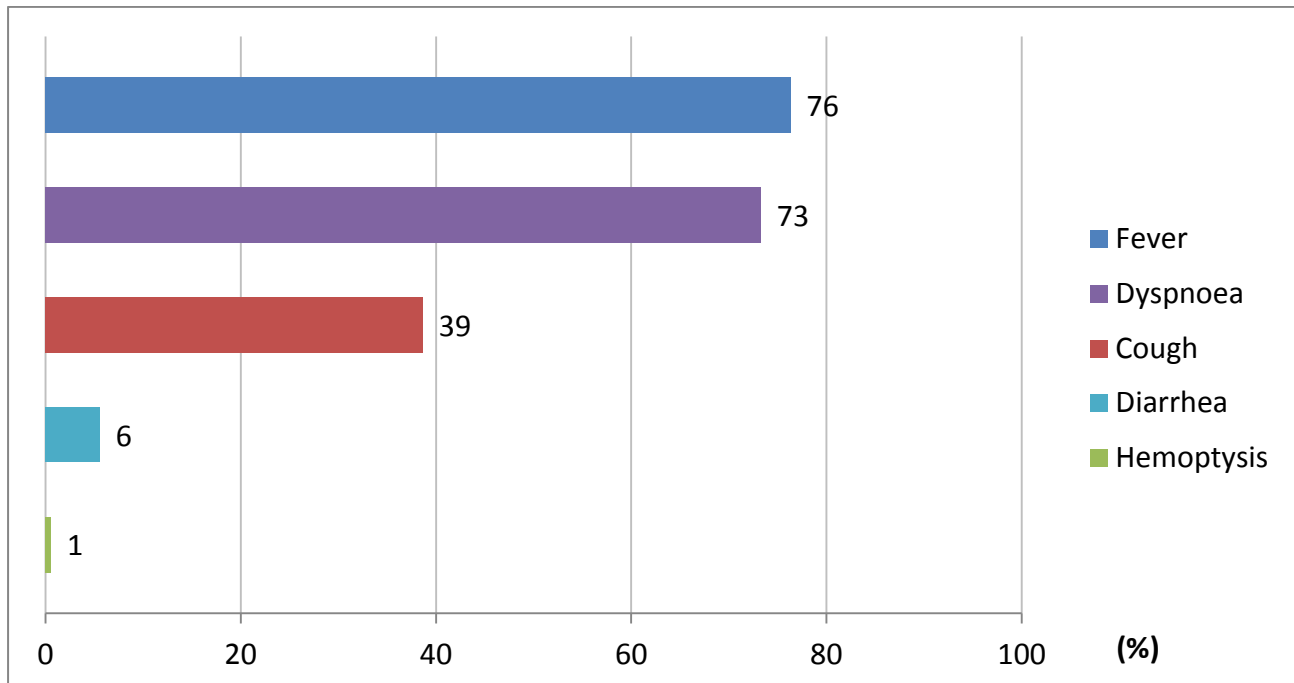
4. Diagnosis of hospitalization

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 208 cases (7.9% of cases) the diagnosis of hospitalization was not related to the infection. In 28 cases the diagnosis of hospitalization concerned exclusively neoplastic pathologies, in 78 cases cardiovascular pathologies (for example Acute Myocardial Infarction-AMI, heart failure, stroke), in 26 cases gastrointestinal pathologies (for example cholecystitis, perforation of the intestine, intestinal obstruction, cirrhosis), in 76 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 (96.8% of cases), followed by acute renal failure (22.0%). Superinfection was observed in 12.2% and acute cardiac injury in 10.6% of cases.

7. Treatments

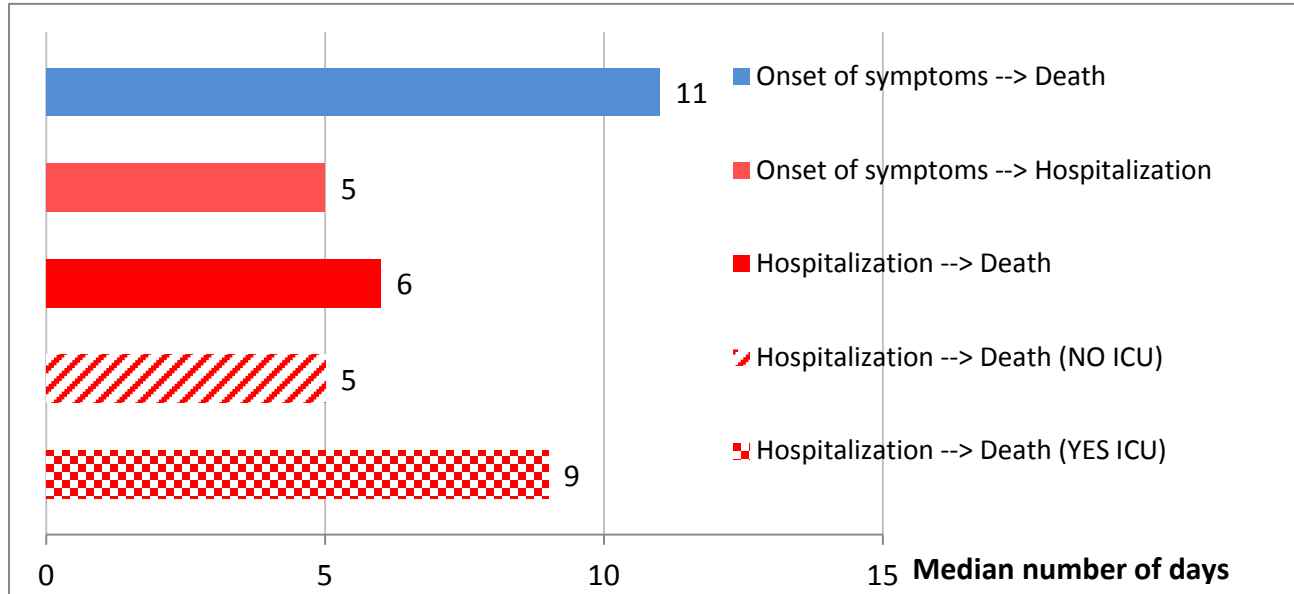
Antibiotics were used by 85% of patients during hospital stay, while less used were antivirals (58%) and corticosteroids (37%). Concomitant use of these 3 treatments was observed in 22.0% of cases.

Out of SARS-CoV-2 positive deceased patients, 3.9% 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 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 14th, 332 out of the 29,692 (1.1%) positive SARS-CoV-2 patients under the age of 50 died. In particular, 74 of these were less than 40 years (49 men and 25 women), age range between 0 and 39 years. For 9 patients under the age of 40 years no clinical information is available; the remaining 53 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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