

# COVID-19 pandemic and total mortality in the first six months of 2020 in Italy

GIANFRANCO ALICANDRO<sup>1</sup>, GIUSEPPE REMUZZI<sup>2</sup>, CARLO LA VECCHIA<sup>3</sup>

<sup>1</sup>Istituto Nazionale di Statistica, Rome, Italy

<sup>2</sup>Istituto di Ricerche Farmacologiche Mario Negri, IRCCS, Bergamo, Italy

<sup>3</sup>Università degli Studi di Milano, Department of Clinical Sciences and Community Health, Milan, Italy

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**PAROLE CHIAVE:** Covid-19; pandemia; mortalità; eccesso di decessi

## ABSTRACT

*Based on mortality data from 93% of Italian municipalities, there was an over 50% excess total mortality in March and a 38% excess in April, corresponding to over 46,000 excess deaths in those two months – as compared to 28,000 deaths attributed to COVID-19 in March and April. No subsequent excess mortality was observed, and in June reported total deaths were 6.2% less than expected. In the first 6 months of 2020, an 11.1% excess mortality was observed in Italy, and an almost 50% excess in Lombardy, the most affected region. Timely monitoring of total mortality has relevant implications for monitoring the COVID-19 pandemic and controlling occupational and social exposures.*

## RIASSUNTO

*«Pandemia COVID-19 e mortalità totale nei primi sei mesi del 2020 in Italia». In base ai dati di mortalità del 93% dei comuni italiani, si è registrato un eccesso di mortalità totale superiore al 50% a marzo e un eccesso del 38% ad aprile, corrispondenti a oltre 46.000 morti in eccesso in quel periodo di due mesi, rispetto ai 28.000 decessi che in marzo e aprile sono stati attribuiti a COVID-19. Nel periodo successivo, non è stata osservata alcuna mortalità in eccesso e in giugno i decessi totali riportati sono stati del 6,2% inferiori al valore atteso. Complessivamente, nei primi sei mesi del 2020 si è osservato un eccesso di mortalità dell'11,1% in Italia e quasi del 50% in Lombardia, la regione più colpita. Il monitoraggio tempestivo della mortalità totale ha implicazioni rilevanti per il monitoraggio della pandemia COVID-19 e per il controllo delle esposizioni professionali e sociali.*

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Corresponding author: Gianfranco Alicandro, Istituto Nazionale di Statistica, Directorate for Social Statistics and Welfare, Integrated system for health, social assistance and welfare, Viale Liegi 13, 00198 Rome, Italy - Tel: +39 06 4673 7387

e-mail: gianfranco.alicandro@istat.it

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## INTRODUCTION

After the outbreak of the COVID-19 in Wuhan (China), Italy was the first country in Europe that had to face the pandemic. The first Italian case was documented on 20<sup>th</sup> February 2020 and right after the country was severely hit with a fatality rate higher than that observed in China, partly due to the older age of the Italian population (7). According to the data provided by the Ministry of Health and the National Civil Protection, the pandemic caused almost 28,000 deaths in March-April, most of them in Northern Italy (6). However, when data on total mortality became available, these figures appeared underestimated (1), and the importance of monitoring total mortality became apparent (3). There has been no reported excess total mortality since May, despite about 8,000 deaths registered as COVID-19 between May and early October. In the province of Bergamo, a doubling of total mortality was already observed in mid-February, but the excess was detected only a month later, when total mortality exceeded 500% of expected (2, 8). In this study, we estimate the excess mortality in the first six months of 2020 in Italy and discuss the relevant implications for managing occupational exposures.

## METHODS

We analyzed preliminary daily total mortality data published by ISTAT, the National Institute of Statistics (5). The number of total deaths were obtained from the integration of the Population Registers and Tax Registers and were available for 7357 out of 7904 Italian municipalities, covering 95% of the Italian resident population. The number of deaths registered in the first six months of 2020 was compared with that registered in the previous quinquennium.

## RESULTS AND DISCUSSION

In Italy, total mortality was remarkably high in the months of March and April 2020 as compared to the average number of deaths registered in the same months of the previous years, for a total excess of over 46,000 deaths, as compared to 28,000 COV-

ID-19 registered deaths in March and April (Table 1). In May, no excess death was reported, while in June the number of deaths was lower than that registered in the previous quinquennium. However, 2020 started as a year of low mortality and in January and February 2020 the number of deaths was respectively 9 and 5% lower as compared to the same months of previous years. Such lower mortality along with that of June 2020 partly offset the excess mortality of March and April 2020, leading to 11% excess deaths in the first six months of 2020. In the most hit region (Lombardy), the number of deaths almost doubled during the first wave of the pandemic leading to an almost 50% excess, despite the lower mortality in January, February and June 2020.

The measures adopted by the Government to contain the spread of the disease, the implementation of an effective surveillance system, and a reorganization of hospital care, particularly emergency and intensive care units, have halted the increase in mortality observed in Italy during the first wave of the pandemic.

Recently, the number of new cases and hospitalizations have been increasing all over the country. However, the number of deaths attributed to COVID-19 remains low (about 20 per day in early October), partly as a consequence of the relatively young age of the new cases and to date, no excess total mortality is evident from the mortality monitoring in urban areas, mainly from Northern and Central Italy (4). Any trend prediction, however, remains uncertain.

Still, with the re-opening of most economic activities workers and their families are at increased risk of contracting the disease due to frequent contacts with customers and coworkers. Thus, to avoid further spread of the infection it is crucial to implement strict surveillance program for those at a high risk of infection, including healthcare workers, workers in retail, grocery, hotel, restaurant and catering, teachers, as well as factory workers, public transit employees, delivery people and police officers.

In addition, all measures implemented to contain the effect of the pandemic need effective and comprehensive monitoring and, in this regard, the availability of timely data on total mortality is of utmost importance in the current phase.

**Table 1** - Number of deaths in the first six months of the 2020 in Italy and in the Lombardy region, and comparison with the number of deaths registered in the previous quinquennium\*

Month	2020	Average 2015-19	Absolute difference (2020 - average 2015-19)	Percent difference (2020 - average 2015-19)
<i>Italy</i>				
January	58,650	64,644	-5994	-9.3
February	51,290 <sup>†</sup>	53,995 <sup>†</sup>	-2705	-5.0
March	82,867	55,065	27,802	50.5
April	67,805	49,144	18,661	38.0
May	48,326	48,181	145	0.3
June	43,247	46,090	-2843	-6.2
<b>All six months</b>	<b>352,185</b>	<b>317,119</b>	<b>35,066</b>	<b>11.1</b>
<i>Lombardy region</i>				
January	9275	10,448	-1173	-11.2
February	8460 <sup>†</sup>	8662 <sup>†</sup>	-202	-2.3
March	25227	8660	16,567	191.3
April	16690	7821	8869	113.4
May	8558	7742	816	10.5
June	7293	7434	-141	-1.9
<b>All six months</b>	<b>75,503</b>	<b>50,767</b>	<b>24,736</b>	<b>48.7</b>

\*The number of total deaths were obtained from the integration of the Population Registers and Tax Registers and were available for 7357 Italian municipalities and 1469 municipalities of the Lombardy region.

† To compare the same number of days in each month of the year, the number of deaths registered on 29<sup>th</sup> February 2016 and 2020 (leap years) were dropped.

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