March 5th 2021

IMPACT OF COVID-19 EPIDEMIC ON TOTAL MORTALITY OF RESIDENT POPULATION YEAR 2020

This fifth Report, jointly produced by Istat and the Istituto Superiore di Sanità (ISS), shows an analysis of total mortality and Covid-19 deaths in the year 2020 for the total number of deaths and for the individuals Covid-19 deaths; it also deals with the main characteristics of the epidemic and the effects on total mortality, distinguishing between the first (February-May 2020) and the second (October-January 2021) epidemic wave.

At the same time, Istat releases data on daily deaths for all municipalities updated up to December 2020. The daily mortality database, made available by Istat for monitoring of deaths, is consolidated 45 days after the date of the event through the integration of population register sources (ANPR and municipalities) with the data of the Tax Register[1]. The Report also provides an estimate of deaths at regional level, only 15 days later than Istat availability, for all causes that occurred in January 2021.

The Istituto Superiore di Sanità (i.e, the Italian National Institute of Health) by the decree 640 of the Italian Civil Protection, of 27 February 2020, is responsible for the Italian National integrated Surveillance of cases of Covid-19.

ISS Surveillance system collects individual data from confirmed COVID-19 cases, especially for the personal data, the place of residence, some clinical laboratory data, information on hospitalization and clinical status, as well as on the presence of some risk factors (chronic diseases) and the final outcome (survived or deceased).

The data, referred to all confirmed cases (i.e., by RT-PCR on nasopharyngeal swabs) of COVID-19, from regional reference laboratories, are collected by the Regions / Autonomous Provinces through a dedicated web platform and are daily updated by each Region[2]. Data here observed are regularly updated. The decision to take as a reference the period January-December 2020 allows to carry out the analysis of the Covid-19 impact on the total mortality of resident population on a database as consolidated as possible[3].

[1] For more information on quality and mortality data coverage see the Methodological Note included in the Report. Link database: https://www.istat.it/it/archivio/240401

[2] Data of the ISS COVID-19 Integrated National Surveillance is not perfectly aligned with the flow of Civil Protection and the Ministry of Health which report aggregated data sent daily by the regions http://opendatadpc.maps.arcgis.com/apps/opsdashboard/index.html#/b0c68bce2cce478eaac82fe38d4138b1

[3] Date of integrated surveillance database refers to February 24th 2021, date of Istat database refers to March 5th 2021.

SYNTHESIS OF MAIN RESULTS

- ISS Integrated National Surveillance reported 75,891 deaths from February to December 31st 2020

- In 2020, total deaths for all the causes have been the highest ever recorded in our country since Second World War: 746,146 deaths, 100,526 more than the 2015-2019 average (15.6% excess). Nevertheless, it is necessary to take into account that in January and February 2020 the deaths due to all the causes were about 7,600 lower than the average of the same two-months period of 2015-2019 and that the first deaths of people with a positive test to SARS-CoV-2 date back to the last week of February. In order to estimate the impact of Covid-19 on total mortality, it is more appropriate to consider the excess mortality that occurred between March and December 2020. In this period 108,178 more deaths have been observed than the average for the same period of the years 2015-2019 (21% excess).

- About the age class, the most significant contribution to the excess of deaths in the year 2020, compared to the average of the years 2015-2019, is due to the increase in deaths of the population aged 80 and over which explains 76.3% the excess of overall mortality; a total of 486,255 people aged 80 and over died in 2020 (76,708 more than in the last five years). The increase in mortality in the 65-79 age class explains another 20% of the excess deaths in the year 2020; in absolute terms, the increase for this age class, compared to the average of the years 2015-2019, is over 20,000 deaths (for a total of 184,708 deaths in 2020).

- From the beginning of the epidemic and until December 31st 2020, Covid-19 deaths contributed to 10.2% on a national level to all the mortality causes, with differences among the geographical areas (14.5% in the North, 6.8% in the Centre and 5.2% in the South) and age classes (4.6% of the total in the 0-49 age class, 9.2% in the 50-64 age class, 12.4% in those aged 65-79 and 9.6% in those aged 80 or more).

- The epidemic can be summarized in three phases. The first phase, from February to the end of May 2020 (First wave), has characterized by a steep increase of cases and deaths and by an important geographical concentration mainly in the North of the country. In the summer season, from June to mid-September (Transition phase), spread of epidemic was, at the beginning, contained. Starting from the end of September 2020 (Second wave) the cases increased sharply again until the first half of November, and then decreased. Compared to the first epidemic wave, the diffusion in Italy has considerably changed both in quantitative terms and in geographical distribution.

- Considering deaths for all the causes, during the first phase of the epidemic there were over 211,750 deaths (from March to May 2020), 50,957 more than the average for the same period of the years 2015-2019.

- The balance of the first phase of the epidemic, in terms of excess deaths due to all the causes, is particularly heavy for Lombardy (+ 111%); for all other Northern regions, the increase in deaths in the period March-May 2020 is between 42% and 47%; only Veneto and Friuli Venezia Giulia have a lower excess of deaths (respectively + 19.4% and + 9.0%). In the Centre, data of the region of Marche are interesting (+ 27.7%), a region with a strong increase compared to the average level of the same geographical area (+ 8.1%).

- Starting from mid-October 2020, the effects of the Second wave of the Covid-19 epidemic on total mortality became increasingly evident. Considering the deaths for all the causes, during the period October-December 2020, there were 213 thousand deaths, 52 thousand more than the average for the same period of the years 2015-2019.

- In some regions, the excess mortality in the last quarter of 2020 exceeded that of the first wave (March-May 2020): in Valle d'Aosta (+ 63.7% compared to + 42.6% in the March-May quarter), in Piemonte (+53% compared to +47.5%), in Veneto (+44.4% compared to 19.4%), in Friuli Venezia Giulia (+45.6% compared to +9.0%), in the Province of Trento (65.4% vs 53.1%). At the opposite, the excess mortality of the October-December quarter, compared to the average of the same period of the years 2015-2019, is lower than that of the first wave in Lombardy

(+37.1% as opposed to +111%), in Emilia-Romagna (+25.4% compared to +43.6%), in Liguria (+33.9% vs +42.2%) and in the province of Bolzano (+39.1% compared to +45.4 %).

- Excess mortality observed in 2020, at a national level, increases with the age and it is more important in men than in women. Considering the age class 80 years and over, mortality goes from a decrease of 3.5% in the period January-February 2020, to an increase of about 40% in the two epidemic waves. For women of the same class, the differences in deaths, compared to the 2015-2019 average, ranges from - 7.4% in January-February 2020 to an increase of approximately 33% in the two waves. Generally, in the quarter March-May 2020 and in the last quarter of the year, the excess mortality by gender and age at national level is similar.

- Significant increases in the number of deaths are also observed for men aged 65-79 (+67.6% in the first wave and + 38.3% in the last quarter of 2020 in the North); in the South 65-79 was the age class with the greatest mortality excess for both men and women (+34.6% and +29.8%, respectively) in the October-December quarter.

- As to the 0-49 age class, considering all the year 2020, the total deaths are 8.5% lower than the average for the years 2015-2019. For women, the decrease is even more important and affects the whole year and all geographical areas, while for men there is a slight increase in deaths in the North during the first epidemic wave (+ 2.9% from March to May) and in the South during the October-December period (+ 1.5%). The fact that the mortality of the younger population in 2020 is generally lower than the 2015-2019 average can be explained by considering both the lower mortality of the epidemic under the age of 50, and the decrease in mortality due to some accidental causes referred to this age class, as a result to the lockdown effect and the consequent stop for mobility and many productive activities.

- The effects of the second epidemic wave on mortality continued in 2021. For the month of January, 70,538 deaths are estimated, 2,000 more than the average for the same month in the 2015-2019 years and 8,500 more than in January 2020; this excess for 75% concerns the Northern regions. Lombardy, Veneto and Emilia-Romagna explain 50% of the excess in January 2021. In January, the absolute value of Covid-19 deaths (12,527) recorded by the Surveillance system is higher than the excess calculated. This phenomenon is probably due to the decrease in mortality, compared to previous years, from other causes than COVID-19, such as influenza, which thanks to the distancing measures had a lower incidence in the last season.

- Eurostat data make it possible to compare the impact of the Covid-19 epidemic on total excess mortality in the European countries by comparing the weekly deaths in 2020 with those of the four-year period 2016-2019 (instead of the five-year period 2015-2019 which is considered in this Report). Starting from March, in 2020 the excess mortality in Italy (20.4%) was lower than Spain (23.6%), but higher than France (13.2%) and Germany (7%). The excess mortality in EU countries was 14.8%. These differences can be partly explained by the different age structures of the population in the considered countries; however, other factors influence the excess mortality of the countries and, mainly, the different intensity and spread of the epidemic.