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Preliminary suicide trends during the COVID-19 pandemic in Milan, Italy

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ARTICLE INFO

Keywords:
COVID-19
Suicide
Italy

ABSTRACT

Europe was the second most affected continent by the 2019 coronavirus disease (COVID-19) pandemic, with Italy paying very high death tolls, especially in Lombardy, a region in Northern Italy. The pandemic profoundly impacted mental health and the world's rates of suicide since its outbreak. COVID-19-related suicide rates nonetheless followed a non-linear trend over the pandemic, decreasing after the COVID-19 outbreak, then raising during an extended follow-up period. Thus, we aimed to further assess the suicide rates in Lombardy. We carried out a retrospective analysis of all the autopsies performed in the year 2020 and within the first four months of the year 2021 through the database of the Institute of Forensic Medicine in Milan. In the year 2020, the recorded suicides decreased in comparison to 2016–2019 (21.19–22.97% of the autopsies), being 98 (18.08% out of 542 autopsies), while, in the first 4 months of the year 2021, 35 suicides were documented (185 autopsies, overall). Since the region of Lombardy was severely affected by COVID-19 since the early months of the year 2020, the extended retrospective follow-up allowed for firmer conclusions and insights about the need to extend the follow-up of COVID-19 pandemic beyond the first months after the outbreak, worldwide. This is with special emphasis towards the need to allocate the proper funds for mental health prevention for the general population as well as the most vulnerable ones, such as people with severe mental illness and caregivers, frontline health workers, and others bereaved by COVID-19.

The death toll due to the 2019 coronavirus disease (COVID-19) pandemic exceeded 3,158,792 people worldwide by the end of April 2021. Europe was the second most affected continent (1,061,218), with Italy suffering 119,021 losses, just beyond the United Kingdom hitting 127,417 casualties (World Health Organization, 2021).

During the year 2020, Italy hit a population of 59,641,488. The region of Lombardy sited in Northern Italy – the most populated and industrialized region of the country – faced one of the highest rates of COVID-19-related deaths, with 32,945 cases (1,008 deaths per 100,000 inhabitants in Milan in the year 2020).

The pandemic profoundly impacted mental health (Varga et al., 2021), this outcome is largely expected and predictable. However, the rates of suicide, which is the most worrisome mental-health-related outcome, followed a peculiar trend, decreasing after the COVID-19 outbreak, then raising over the following months of the pandemics (Pirkis et al., 2021). Thus, we aimed at investigating the suicide rate in

Lombardy, in particular in the provinces of Milan (3,265,327 inhabitants) and Monza and Brianza (870,193). We carried out a retrospective analysis of all the autopsies performed in the year 2020 and within the first four months of the year 2021 through the database of the Institute of Forensic Medicine in Milan. We computed the risk ratios for suicide during the first four months of 2021 compared to the corresponding months of 2019 (a non-COVID-19 year), and January and February of 2020 (March to December were COVID-19 months in Italy).

Suicides in 2016–2019 ranged between 145 and 159 (2016: 150, 22.97% out of a total of 653 autopsies; 2017: 145, 21.19% out of 684 autopsies; 2018: 159, 22.26% out of 714 autopsies; 2019: 148, 21.20% out of 698 autopsies). In the year 2020, the recorded suicides decreased, being 98 (18.08% out of 542 autopsies), or 30 people per one million in Milan in the year 2020, while, in the first 4 months of the year 2021, 35 suicides were documented (185 autopsies) (see Fig. 1). In the year 2020, 4 suicides (4.08%) reported some problems related to COVID-19 while

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<https://doi.org/10.1016/j.jpsychires.2021.08.029>

Received 14 May 2021; Received in revised form 28 July 2021; Accepted 19 August 2021

Available online 21 August 2021

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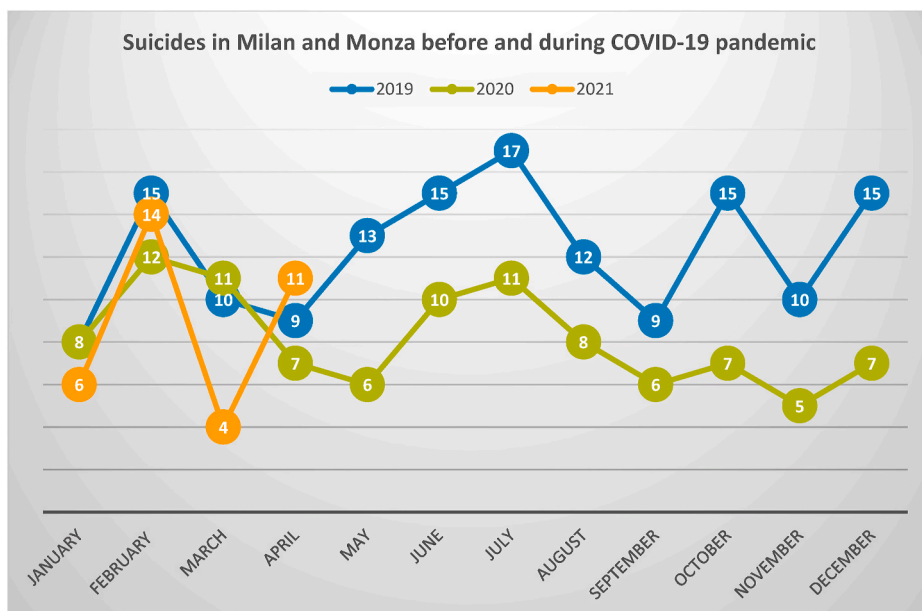


Fig. 1. Number of suicides in the provinces of Milan and Monza and Brianza before and during the COVID-19 pandemic. **Note:** We used the following formula to compute the risk ratios (RRs) for suicide during a given month of the year 2021 (first four months) compared to the corresponding month during the year 2019 (a non-COVID-19 year), but not the corresponding months of the year 2020 except January and February (March to December were COVID-19 months in Italy). Then, we computed the RRs for suicide during the COVID-19 months in Italy during the year 2020 (March to December) against the corresponding month of the year 2019 – data not shown. Finally, “observed frequencies were the rates of suicide occurring during January, February, March, or April 2021”; the “expected frequencies were the corresponding rates observed during the years 2019 or 2020”. For example, a RR of suicide was computed as follows: $[a/(a+b)]/[c/(c+d)]$ a=suicides during a given month of 2021 a+b=all the autopsies carried out during the corresponding month (including non-suicide cases) c=suicides during the corresponding month of the year 2019 c+d=all the autopsies carried out during the corresponding month (including non-suicide cases). RR of suicide during January 2021 against January 2019=0.8 meaning that the risk of suicide in the

presence of COVID-19 was 20% lower compared to the 2019 one.

RR of suicide during February 2021 against February 2019=1.2 suggesting a 20% increment of suicide risk during the COVID-19 month.

RR of suicide during March 2021 against March 2019=0.53 indicating a 47% reduction of suicide risk during the COVID-19 month.

RR of suicide during April 2021 against April 2019=1.31 suggesting a 31% increment in the suicide rate during the COVID-19 month.

in 2021 the number increased (10, 28.57%).

These findings are in line with the ones reported by Pirkis et al. (2021), even if their preliminary nature did not allow further interpretations. These data reinforce the need to deliver additional funds for mental health prevention in Lombardy as in other regions, not only for socio-economically disadvantaged groups but also for other vulnerable ones such as people with severe mental illness and caregivers, COVID-19 patients, frontline health workers, and those bereaved by COVID-19 (Wasserman et al., 2020).

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