



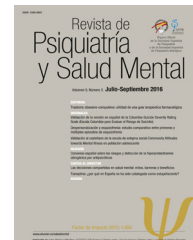
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ORIGINAL ARTICLE

Suicide mortality in Spain in 2020: The impact of the COVID-19 pandemic

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KEYWORDS

Suicide;
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Abstract

Introduction: Suicide constitutes a major concern with evident contribution to global mortality worldwide. Evidence on suicide trends is mixed in the COVID-19 pandemic era. Spain may be an at-risk country for increased suicide risk in the time of COVID-19 pandemic due to prolonged restrictions and lockdown, elevated COVID-19 wave recurrence and related mental health impact. This brief report aims to provide some insight into the suicide mortality trends in the first COVID-19 pandemic year in Spain, using national data.

Material and methods: Data from the National Death Index were used. Annual mortality rate was calculated at a province level under random-effects models for the 2019 and 2020 years. Poisson timeseries regression was used to study the relationship between monthly suicide mortality and COVID-19 pandemic outbreak and lockdown, and second COVID-19 wave peak covariates.

Results: 3671 people died by suicide in 2019 in Spain and 3941 people died by suicide in 2020. The random-effects mortality rate in 2019 was 8.3 (CI₉₅ = 7.6, 9.0) per 100,000 inhabitants, and mortality rate in 2020 was 8.9 (CI₉₅ = 8.3, 9.6). No significant differences between mortality rates were found ($p = .18$). The Poisson regression showed a significant relationship between the COVID-19 outbreak and suicide mortality trend, with $OR = 1.07$ (CI₉₅ = 1.02, 1.12).

Conclusions: Although annual mortality rates were not significantly different, an increased suicide risk was found from May, 2020 onwards. Our results claim for action to tackle suicide in the post-pandemic era taking into account the discouraging upcoming scenario.

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PALABRAS CLAVE

Suicidio;
Mortalidad;
Pandemia COVID-19;
España;
2020

Mortalidad por suicidio en España en 2020: el impacto de la pandemia por COVID-19

Resumen

Introducción: El suicidio constituye uno de los problemas de salud pública más importantes a nivel mundial. Los estudios no dejan clara la tendencia de mortalidad por suicidio en la pandemia por COVID-19. España podría registrar tasas crecientes de mortalidad por suicidio, dadas las restricciones prolongadas, la recurrencia de olas del virus y el elevado impacto en salud mental. Este estudio breve pretende proporcionar evidencia de las tendencias de mortalidad en el primer año de pandemia COVID-19 en España.

Materiales y método: Se estimaron tasas anuales de mortalidad, usando modelos de efectos aleatorios a partir del índice nacional de mortalidad para los años 2019 y 2020. Se usaron regresiones poissonianas para estudiar la relación de la mortalidad mensual por suicidio y factores temporales asociados a la pandemia.

Resultados: Tres mil setecientos sesenta y una personas murieron por suicidio en España en 2019, y 3.941 personas murieron en 2020. La tasa de mortalidad en 2019 fue de 8,3 (IC₉₅ = 7,6-9,0) por cada 100.000 habitantes, y de 8,9 (IC₉₅ = 8,3-9,6) en 2020. No se encontraron diferencias significativas entre ambas tasas ($p=0,18$). La regresión poissoniana reveló una relación significativa entre la tendencia de mortalidad por suicidio y el inicio de la pandemia COVID-19, OR = 1,07 (IC₉₅ = 1,02-1,12).

Conclusiones: No se observó tasa de mortalidad por suicidio significativamente mayor en 2020, pero sí una tendencia creciente de casos desde mayo del 2020 en adelante. Nuestros resultados pretenden instar a tomar medidas para atajar la conducta suicida en la época pospandemia.

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Introduction

Suicide constitutes a serious health concern with global impact. The World Health Organization informed that more than 700,000 people died by suicide in 2019.¹ There is increasing concern that the COVID-19 pandemic could exacerbate suicide risk.¹⁻³ However, evidence is quite mixed in the first year of the COVID-19 pandemic. Some studies have not supported such a rising suicide trend.⁴⁻⁷ A national-data study from Japan did find an upward trend in suicide mortality from July 2020.⁸

Spain may be an at-risk country for increased suicide risk in the time of COVID-19 pandemic due to high mortality of the first wave, the elevated COVID-19 wave recurrence, early strict lockdown, and elevated mental health impact.^{3,9-11} The lockdown in Spain was one of the most restrictive in Europe. The Government imposed a State of Alarm starting on March 15th that established a national lockdown, including the imposition of distancing measures such as the closure of non-essential customer-facing businesses and educational institutions. A period of five weeks started in which citizens were only allowed to leave their homes for essential work, to buy food and other staple products, or for emergencies. On May 4th, citizens were first authorised to leave their homes to exercise or walk, for a maximum of 1 h a day, under strict conditions. From May 10th to June 21st, a progressive de-escalation occurred. On the other hand, Spain has not implemented a national suicide prevention plan yet, despite the increasing trends of suicide mortality in recent decades.¹² Even though, recent studies based on regional records have shown some evidence on an absence of increasing suicide mortality rates during the

first months of the COVID-19 pandemic.^{4,13} This report aims to expand on suicide mortality trend in the first COVID-19 pandemic year in Spain.

Materials and methods

We used national data based on the National Death Index, annually released by the Spanish National Institute of Statistics (*Instituto Nacional de Estadística*, INE). Monthly suicide death data from the 52 Spanish provinces were used covering both the years 2019 and 2020. First, annual mortality rate was calculated at a province level under random-effects models due to a large variability between province-specific rates.^{14,15} Afterwards, trend decomposition and stationarity analysis (i.e., augmented Dickey-Fuller test) were conducted. Finally, Poisson timeseries regression was used to analyse the relationship between monthly suicide mortality and time-variant covariates¹⁶: the COVID-19 pandemic outbreak and lockdown (from March 2020) and the second COVID-19 wave peak in Spain (October 2020). The Quasi Information Criterion (QIC) was used for regression model fit. A better covariate model fit is endorsed by a lower QIC, in comparison to an unconstrained model. All the analyses were conducted using the R Core Software (tsglm, meta, metaphor packages).

Results

A total of 3671 people died by suicide in 2019 in Spain, with a random-effects mortality rate of 8.3 (CI₉₅ = 7.6, 9.0) per 100,000 inhabitants (fixed-effects mortality = 7.7, CI₉₅ = 7.7,

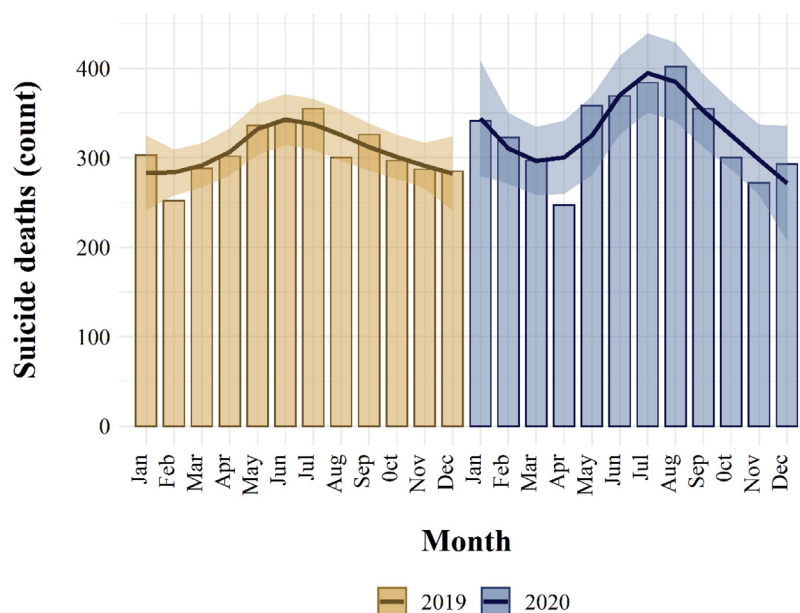


Figure 1 Timeseries of suicide mortality in Spain from 2019 to 2020. Dashed area represents the 95% confidence of monthly count.

7.7). In 2020, 3941 people died by suicide and the random-effects mortality rate was 8.9 (CI₉₅ = 8.3, 9.6) cases per 100,000 inhabitants (fixed-effects rate = 8.2, CI₉₅ = 7.7, 7.7). There were no significant differences between the annual mortality rates, $z = 1.33$, $p = .18$. Monthly suicide mortality count is displayed in Fig. 1. A sudden decrease in suicide mortality can be seen in March 2020, with a sharp increase in May onwards levelling off in October. A lack of a stationary component within the timeseries was endorsed ($t = -3.31$, $p = 0.09$). The Poisson regression (QIC for covariate model = 295.07; QIC for unconstrained model = 299.71) showed a significant relationship between the COVID-19 outbreak and suicide mortality trend from March 2020, with $OR = 1.07$ (CI₉₅ = 1.02, 1.12). A higher number of suicide cases was found from May (mean increase of 5.2% in comparison to 2019), except in the month of November (-5.3%, respectively), probably due to the second COVID-19 wave.

Discussion

Our results contribute to extend the insight into existing evidence on suicide trends in the first COVID-19 pandemic year in Spain, using national data. Our findings go in line with previous studies on a lack of annual increase in suicide mortality.^{4,7,13,17} This despite the fact that a rising trend in suicide risk was found upon strict COVID-19 lockdown ease (from May, 2020). This result may go in line with the study by Sakamoto et al.⁸ on the significant impact of the COVID-19 pandemic in suicide mortality across 2020. Further analysis should be conducted to identify vulnerable populations and critical risk factors. Our results claim for action to anticipate the discouraging upcoming scenario and enforce preventive strategies to tackle suicide in the post-pandemic era. Finally, we urge to implement a consensus national plan on suicide prevention to mitigate the impact

of the COVID-19 pandemic on vulnerable populations and to promote downward suicide trends in Spain.

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Conflict of interest

The authors declare that they do not have any conflict of interest to be disclosed.

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