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Research paper

# Hospitalization for self-harm during the early months of the COVID-19 pandemic in France: A nationwide retrospective observational cohort study

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## ABSTRACT

**Background:** Little is known to date about the impact of COVID-19 pandemic on self-harm.**Methods:** The number of hospitalizations for self-harm (ICD-10 codes X60-X84) in France from 1st January to 31st August 2020 (including a two-month confinement) was compared to the same periods in 2017–2019. Statistical methods comprised Poisson regression, Cox regression and Student's *t*-test, plus Spearman's correlation test relating to spatial analysis of hospitalizations.**Outcomes:** There were 53,583 self-harm hospitalizations in France during January to August 2020. Compared to the same period in 2019, this represents an overall 8.5% decrease (Relative Risk [95% Confidence Interval] = 0.91 [0.90–0.93]). This decrease started in the first week of confinement and persisted until the end of August. Similarly, decrease was found in both women (RR=0.90 [0.88–0.92]) and men (RR=0.94 [0.91–0.95]), and in all age groups, except 65 years and older. Regarding self-harm hospitalizations by means category, increases were found for firearm (RR=1.20 [1.03–1.40]) and for jumping from heights (RR=1.10 [1.01–1.21]). There was a trend for more hospitalizations in intensive care (RR=1.03 [0.99–1.07]). The number of deaths at discharge from hospital also increased (Hazard Ratio = 1.19 [1.09–1.31]). Self-harm hospitalizations were weakly correlated with the rates of hospitalization for COVID-19 across administrative departments (Spearman's rho = -0.21; *p* = 0.03), but not with overall hospitalizations.**Interpretation:** The COVID-19 pandemic had varied effects on self-harm hospitalizations during the early months in France. Active suicide prevention strategies should be maintained.**Funding:** French National Research Agency.© 2021 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

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## 1. Introduction

The new coronavirus disease -2019 (COVID-19) was initially reported as atypical cases of pneumonia in Wuhan, China, at the end of 2019 and it spread rapidly resulting in a major outbreak in this province. The cause of the outbreak was soon identified as a novel strain of coronavirus named SARS-Cov-2. From Wuhan the epidemic spread rapidly across the world and was declared a pandemic by the World Health Organization in March 2020. Currently (in March 2021) the pandemic is still ongoing and has killed more than 2.5 million people worldwide. In order to limit the contagion, governments implemented various local and national strategies, the most striking of them being physical distancing and confinement of populations at the level of a city, a region/state/province, or a whole country. While pandemics and their control by confinements of populations are not new in history, it was a totally novel experience for the current generations in many countries, including France.

### RESEARCH IN CONTEXT

#### Evidence before the study

Following the start of the COVID-19 pandemic in early 2020, conflicting speculations have been made about its expected impact on suicidal behaviors. However, to date, knowledge remains limited. Some early reports suggest that while the pandemic led to increased depression and anxiety levels in the general population, no increase in suicide rates was observed in the few places with real-time data. Data about non-lethal self-harm is also limited and often local.

#### Added value of this study

This study reports statistics at the scale of a country in terms of hospitalizations for self-harm during the early months of the pandemic (1st January to 31st August 2020, including a strict confinement of the whole population from March 17th to May 11th, and the subsequent decrease in the level of contamination during the summer). A complex picture emerged. Overall, there was a decrease in the number of hospitalizations, starting the first week of confinement and lasting until the end of observations in August. However, this was not observed in the elderly, the population most affected by COVID-19 mortality. Moreover, more severe acts (e.g. those using firearms or jumping from heights, those necessitating intensive care, and those leading to death at hospital) all increased during this period. Finally, the global decrease in hospitalizations for self-harm was slightly correlated to the level of COVID-19 hospitalizations across administrative departments (but not to the decrease in overall hospitalizations), suggesting that COVID-19 may have also impacted the usual care to suicide attempters.

#### Implications of all the available evidence

We observed a general decrease in self-harm hospitalizations. It is, however, unclear if this reflects a lower number of self-harming behaviors, a lower rate of consultations at emergency departments, and/or a lower rate of hospitalizations due to fear of contamination or lower availability of beds. Vulnerable populations (notably the elderly and those realizing more severe suicidal acts) may have been negatively impacted early during the pandemic. Maintaining suicide prevention efforts and usual care, and constant and real-time monitoring of self-harm statistics in times of pandemic is of major importance.

Studies of previous quarantines in recent years have reported a negative impact on mental health overall [1]. Studies conducted during the present COVID-19 pandemic confirmed these findings and showed increased rates of anxiety, depression and traumatic stress across the general population in various countries [2]. Some studies also showed increases in suicidal ideation [3,4], notably in conditions of confinement [5]. In France, a regular web-based survey of a representative sample of the general population (named CoviPrev) conducted by *Santé Publique France* ("Public Health France") since March 23th, 2020 (<https://www.santepubliquefrance.fr/etudes-et-enquetes/covid-19-une-enquete-pour-suivre-l-evolution-des-comportements-et-de-la-sante-mentale-pendant-l-epidemie>) showed an initial increase in depression and anxiety levels associated with sleep problems, alcohol use and tobacco use, followed by a relative improvement of these indexes after the end of the confinement. Concerns have been raised about specific populations, such as adolescents and young adults, those unemployed and economically disadvantaged, individuals with a pre-existing mental illness, and frontline medical workers [4,6–10].

There is therefore a worrying deterioration of mental health during pandemics and confinements in the general population, which is compounded by issues pertaining to potentially reduced access to mental health care, limited social support, and sometimes professional and financial problems. Thus, a major question arises as to whether COVID-19 pandemic and related preventative measures may have had an effect on the rates of suicidal acts. There is limited data on the effect of previous epidemics on suicidal behavior and studies were usually of low methodological quality [11,12]. Regarding lethal self-harm during COVID-19 pandemic, data on suicide deaths are still scarce due to the usual delay in access to causes-of-mortality data [13]. However, countries with real-time collection of suicide data showed decreased or unchanged suicide rates, e.g. in Peru [14], Australia [15], Norway [16], Japan (early period) [17], or Massachusetts, USA [18]. Regarding non-lethal self-harm, the data is also still limited. In one university hospital in Ireland, emergency presentations for self-harm decreased in March-April 2020 before increasing in April-May 2020 [19]. In a trauma center in the UK, an increase in self-harm emergency presentations was observed [20]. Of note, an increase in more violent suicidal acts (penetrative lesions) has also been observed in a local hospital, UK [21], which provides motivation to analyze the change in occurrence of self-harm as a function of the suicidal means and lethality of the act.

In France, the first COVID-19 cases were officially detected and publicly announced on January 24th, 2020. Initial interventions focused on the isolation of confirmed or suspected cases, and contact cases. The rapidly increasing number of contaminated cases and deaths led the government to several graded decisions during the first half of March 2020 (e.g. closing of schools, bars and restaurants) until the implementation of a strict national confinement starting on March 17th (week 11). The whole population was then confined at home and only limited categories of professionals were allowed to go out to work. Schools and universities were closed. The confinement ended on May 11th (week 19). Importantly, while the confinement was nationwide, the level of contamination and deaths varied greatly between administrative regions and departments. Deaths and hospitalizations due to COVID-19 remained low during the summer vacation time in July and August 2020, although signs of an active viral circulation were reported during this period. A second confinement was then declared starting October 30th until December 15th, 2020 in a very different context of economic crisis, awareness of the prolonged presence of the pandemic, uncertainties about its ending, all mixed with expectations of a vaccine.

The present article aims to investigate the impact of the COVID-19 pandemic on the number of self-harm hospitalizations in France at the national level. We focused on the period between January and August 2020 as the early months of the pandemic in France, which



period. The outcome was analysed on a monthly or weekly basis, and according to age and gender.

Secondary outcomes relating to self-harm hospitalizations included: the total duration of stays (in days) per patient; mean duration of stays (in days) per patient; the number of stays in an intensive care unit and the hospital mortality following self-harm.

In accordance with a recent publication [22], self-harm means (defined as the technique employed for the act) was categorized according to lethality, as violent (X66 to X82; eight categories) or non-violent (X60–X65; two categories) acts, and by individual category of the means, including also the “other means” (X83–X84).

For outcomes relating to individual hospitals at the local level, we aimed to examine the link between the change in number of hospitalizations for self-harm between 2019 and 2020 and a) number of hospitalizations related to COVID-19 infection, and b) the change in number of total hospitalizations (all causes) between 2019 and 2020. We calculated three indicators at the level of the French administrative departments: i) the percentage of change in hospitalizations for self-harm in 2020 as compared to 2019; ii) the standardized hospitalization rates for COVID-19 per 10,000 inhabitants; iii) the percentage of change in overall hospitalizations (for any cause) per 10,000 inhabitants. Hospitalization rates for COVID-19 were standardized for age and gender according to the direct method, using as reference the 2017 national census data produced by The National Institute of Statistics and Economic Studies (INSEE).

### 2.3. Statistical analyses

Relative risks (also called Risk Ratios) for examining differences in the number of self-harm hospitalizations between 2019 and 2020 were estimated using a Poisson regression model. Poisson regressions were also used to perform comparisons between 2019 and 2020 for: the number of self-harm hospitalizations per suicidal means category, overall violent means category, and the number of self-harm hospitalizations in intensive care units. Differences between 2019 and 2020 in the total duration of hospitalization per patient and the mean duration of hospitalization per patient were tested using the two-sample Student's *t*-test. Hospital mortality in 2019 and 2020 was estimated using the Cox proportional-hazards regression model, taking into account the duration of hospitalization for patients who died at the hospital. The spatial distributions of hospitalizations were described graphically and the spatial overlap between the distributions across departments was analysed using Spearman's correlation tests.

The p-value was set a priori at 0.05 for all analyses and 95% confidence intervals of the estimates were calculated.

All analyses were performed using SAS (SAS Institute Inc, Version 9.4, Cary, NC).

### 2.4. Ethics approval

The access to the ATIH (“Agence Technique de l'Informationsur l'Hospitalisation”) hospital data platform was approved by the National Committee for data protection (registration CNIL number 2,204,633) and therefore was conducted in accordance with the Declaration of Helsinki. Written consent was not needed for this study.

### 2.5. Role of the funding source

This study was partly funded by a grant from the French National Research Agency to C. Quantin. The authors are funded by their own institutions (see affiliations) and these institutions had no role in the analyses or writing of this report.

## 3. Results

A total of 53,584 hospitalizations for self-harm occurred between January and August 2020, representing 46,922 patients. A decrease in the number of hospitalizations from the same period occurred in each of the previous three years, as follows: 2019 (−4972 representing −8.5%; Relative Risk (RR) [95% Confidence Intervals] = 0.91 [0.90–0.93];  $p < 0.0001$ ), 2018 (−7948; −12.9%; RR = 0.87 [0.86–0.88];  $p < 0.0001$ ), and 2017 (−6528; −10.9%; RR = 0.89 [0.88–0.90];  $p < 0.0001$ ) (Table 1). Similar decrease was found when comparing the number of patients (−4552; −8.8%; RR = 0.91 [0.90–0.92];  $p < 0.0001$ ).

At the monthly level, the decrease in hospitalizations started in March after a relative increase in January and February (except when compared to January 2018). At the weekly level, Fig. 1 shows that the decrease in self-harm hospitalizations in 2020 started abruptly at week 11, the week when the general confinement was declared. The lower level of self-harm hospitalizations in 2020 persisted from March until August 2020 in spite of an increase between week 13 (during confinement) until approximately week 27 (early July, post-confinement).

When comparing self-harm hospitalization between 2019 and 2020, a decrease was found in both women (−9.8%; RR = 0.90 [0.88–0.92];  $p < 0.0001$ ) and men (−6.4%; RR = 0.94 [0.91–0.95];

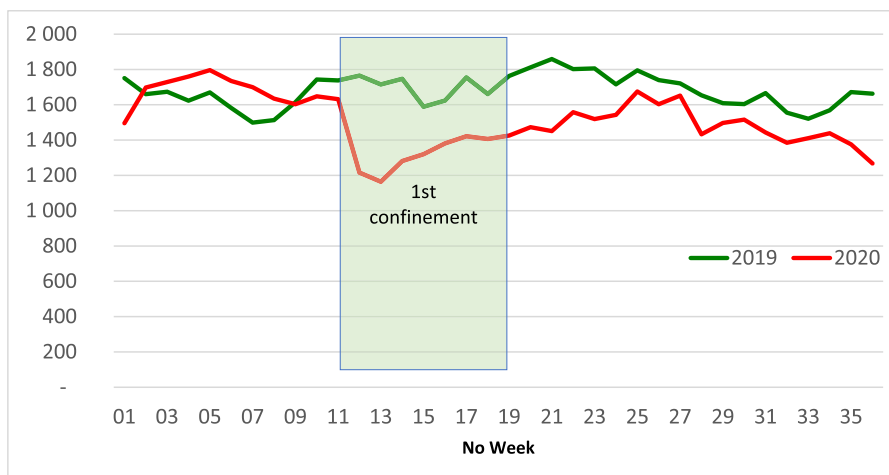


Fig. 1. Number of weekly hospitalizations for self-harm in France in 2020 and 2019 (January to August only).

**Table 2**  
Number of hospitalizations for self-harm in France in 2019 and 2020 (January to August only), by gender and age.

Age group	N in 2020			N in 2019			Difference in N between 2020 and 2019			% change between 2020 and 2019			Risk Ratio (95% CI)		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
10-14	450	2273	2723	571	2924	3495	-121	-651	-772	-21.2	-22.3	-22.1	0.79 (0.70-0.90)**	0.78 (0.74-0.82)**	0.78 (0.74-0.82)**
15-19	1632	5053	6685	1943	5904	7847	-311	-851	-1162	-16.0	-14.4	-14.8	0.84 (0.79-0.90)**	0.86 (0.82-0.89)**	0.85 (0.82-0.88)**
20-24	1774	2827	4601	1883	2961	4844	-109	-134	-243	-5.8	-4.5	-5.0	0.94 (0.88-1.00)	0.95 (0.91-1.00)	0.95 (0.91-0.99)*
25-29	1819	2031	3850	1915	2199	4114	-96	-168	-264	-5.0	-7.6	-6.4	0.95 (0.89-1.01)	0.92 (0.87-0.98)*	0.94 (0.89-0.98)*
30-34	2081	1922	4003	2119	2187	4306	-38	-265	-303	-1.8	-12.1	-7.0	0.98 (0.92-1.04)	0.88 (0.83-0.93)**	0.93 (0.89-0.97)**
35-39	2196	2099	4295	2333	2292	4625	-137	-193	-330	-5.9	-8.4	-7.1	0.94 (0.89-1.00)*	0.92 (0.86-0.97)*	0.93 (0.89-0.97)**
40-44	2093	2073	4166	2205	2550	4755	-112	-477	-589	-5.1	-18.7	-12.4	0.95 (0.89-1.01)	0.81 (0.77-0.86)**	0.88 (0.84-0.91)**
45-49	2374	3037	5411	2644	3426	6070	-270	-389	-659	-10.2	-11.4	-10.9	0.90 (0.85-0.95)**	0.89 (0.84-0.93)**	0.89 (0.86-0.92)**
50-54	2040	2895	4935	2199	3202	5401	-159	-307	-466	-7.2	-9.6	-8.6	0.93 (0.87-0.98)*	0.90 (0.86-0.95)**	0.91 (0.88-0.95)**
55-59	1543	2238	3781	1672	2308	3980	-129	-70	-199	-7.7	-3.0	-5.0	0.92 (0.86-0.99)*	0.97 (0.91-1.03)	0.85 (0.81-0.99)*
60-64	971	1571	2542	1063	1668	2731	-92	-97	-189	-8.7	-5.8	-6.9	0.94 (0.88-1.01)	0.91 (0.88-0.98)*	0.93 (0.88-0.98)*
65-69	752	1229	1981	723	1235	1958	29	-6	23	4.0	-0.5	1.2	1.04 (0.94-1.15)	0.99 (0.92-1.08)	1.01 (0.95-1.08)
70-74	499	892	1391	510	908	1418	-11	-16	-27	-2.2	-1.8	-1.9	0.98 (0.90-1.08)	0.98 (0.91-1.06)	0.98 (0.91-1.06)
75-79	382	607	989	353	586	939	29	21	50	8.2	3.6	5.3	1.08 (0.94-1.25)	1.04 (0.92-1.16)	1.05 (0.96-1.15)
80-84	351	599	950	301	550	851	50	49	99	16.6	8.9	11.6	1.17 (1.00-1.36)	1.09 (0.97-1.22)*	1.12 (1.02-1.22)*
85+	502	779	1281	504	718	1222	-2	61	59	-0.4	8.5	4.8	1.00 (0.88-1.13)	1.08 (0.98-1.20)	1.05 (0.97-1.13)
Total	21,459	32,125	53,584	22,938	35,618	58,556	-1479	-3493	-4972	-6.4	-9.8	-8.5	0.94 (0.91-0.95)**	0.90 (0.88-0.92)**	0.91 (0.90-0.92)**

Footnotes: CI: Confidence Interval;

\*  $p < 0.05$ ;

\*\*  $p \leq 0.0005$ ;

\*\*\*  $p \leq 0.0001$ ; Risk Ratio from Poisson regression model.

$p < 0.0001$ ) (Table 2 and Fig. 2). Women represented 70.2% of the overall decrease.

Regarding age, a decrease was found in all age groups, except for those aged 65 years and older, in whom no change (or an increase in a few age groups) in the number of self-harm hospitalizations was found in both men and women (Table 2 and Fig. 2). People under 19 represented 38.8% of the total decrease.

For the difference in the number of self-harm hospitalizations between 2019 and 2020, a decrease was found for both non-violent (drugs) and violent means, with the notable exception of firearm (+20.3%; RR = 1.20 [1.03-1.40];  $p = 0.02$ ), and jumping from heights (+10.5%; RR = 1.10 [1.01-1.21];  $p = 0.03$ ) (Table 3). Moreover, hospitalization in intensive care for self-harm increased between 2019 and 2020, although not-statistically significant (+3.5%; RR = 1.03 [0.99-1.07],  $p = 0.06$ ), as well as the number of deaths at hospital following a self-harm (Hazard Ratio = 1.19 [1.09-1.31];  $p = 0.0002$ ).

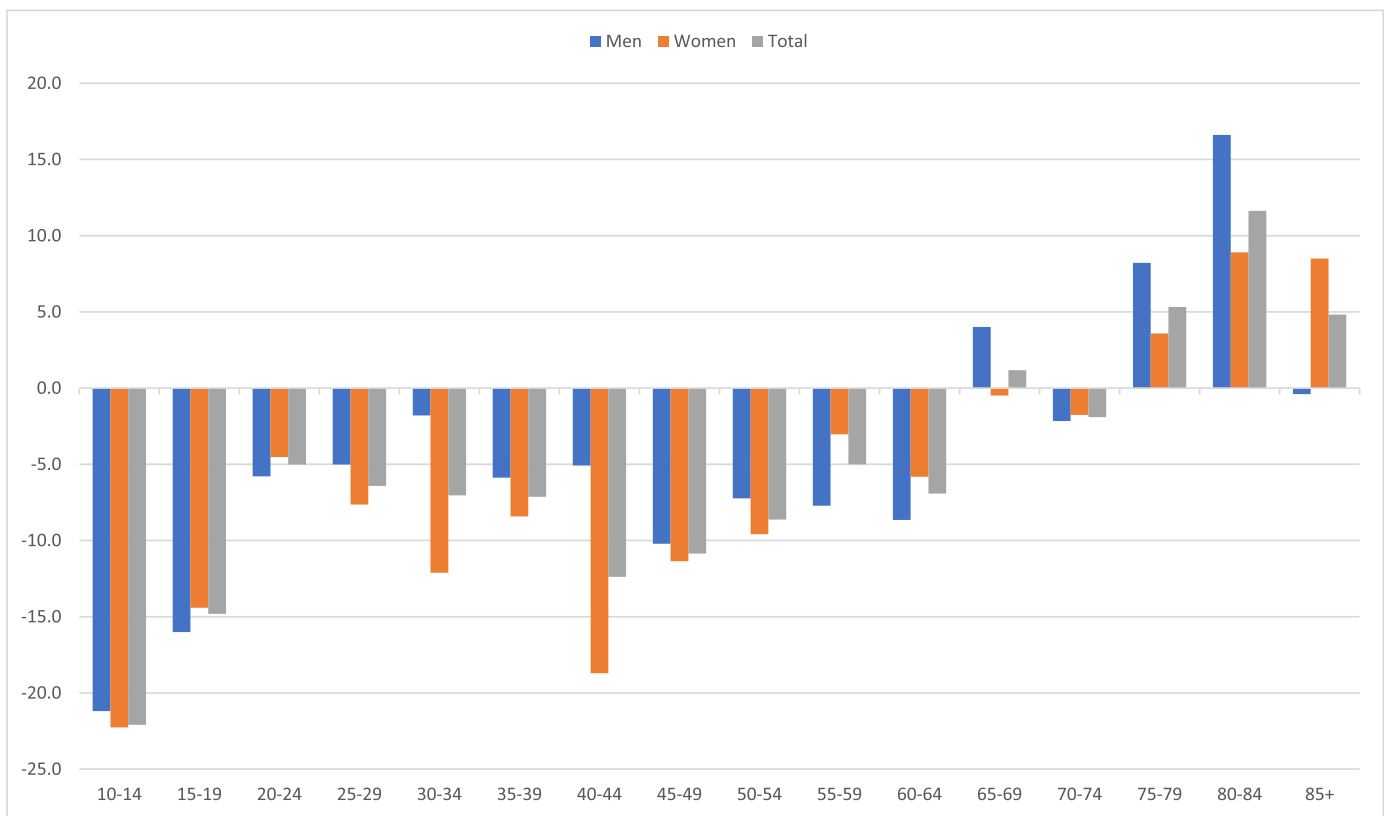
There was no significant difference in 2020 relative to 2019 in terms of mean number of hospital stays per patient (1.14 (0.6) vs. 1.14 (0.7);  $t = -1.04$ ;  $p = 0.3$ ) or mean duration of hospital stays (3.11 (7.8) vs. 3.11 (8.1);  $t = -0.02$ ;  $p = 1.0$ ).

The North-Eastern quarter of France and the overseas department of French Guyana were more affected by COVID-19 epidemic than other departments between January and August 2020 (Fig. 3). There was a weak (but significant) negative correlation between the change in the number of hospitalizations for self-harm and hospitalization rates for COVID-19 (Spearman's rho  $r_s = -0.21$ ;  $p = 0.03$ ) across administrative departments; and no significant correlation with the change in the number of total hospitalizations ( $r_s = 0.1$ ;  $p = 0.3$ ) (Fig. 3).

#### 4. Discussion

While the COVID-19 pandemic and the quarantine period were generally associated with increased signs of anxiety and depression across countries including France, our data suggests that it did not translate into increased hospitalizations for self-harm overall. On the contrary, we observed an 8.5% decrease in the number of hospitalizations between 2019 and 2020. A decrease was also found when comparing 2020 data to 2018 and 2017. Moreover, it started precisely in the first week of the confinement and persisted after its end and until the end of the observation period in August.

Several non-exclusive hypotheses may be put forward. One hypothesis may be that the lockdown of several individuals at home may have prevented many acts from occurring. Also, some previous reports suggest that self-harm decreases in times of national tragedies, the so-called "pulling-together effect" [23,24]. However, it is important to keep in mind that many people who self-harmed may have stayed at home. One national survey in France before the COVID-19 pandemic showed that up to 40% report a history of self-harm without subsequent presentation at the hospital [25]. This lack of hospital presentation after self-harm may have been exacerbated by the fear to go to emergency departments during the pandemic, although access to medical care has always been maintained. Reports from emergency departments in Paris showed a 42% decrease in consultations for suicide attempts during the first confinement [26]. Future investigations should aim at explaining the origin of this decrease in emergency consultations (less self-harming behaviors and/or less hospital presentations). One last hypothesis is a decrease in the rate of hospitalizations after presentation at the emergency departments due to refusal from the patient to be hospitalized in the COVID-19 context or due to reduced availability of beds. In support of these latter hypotheses, decreasing level of self-harm hospitalization was weakly correlated with higher rates of COVID-19 hospitalizations across administrative departments. Therefore, it cannot be excluded that COVID-19 may have negatively impacted the usual care given to



**Fig. 2.** Change (%) in number of hospitalizations for self-harm in France in 2020 as compared to 2019 (1st January to 31st August only) per age group and gender.

suicide attempters. More investigations will be necessary to clarify mechanisms in play.

This decrease was particularly marked among women (70.2% of the total decrease) and in young people under 19 (38.8% of the total decrease). A narrow peak of non-lethal self-harm is usually found among women aged around 16 years in France, some of them being non-suicidal [22]. It is also interesting to note a large decrease in use of “sharp or blunt objects”. Again, several non-exhaustive hypotheses

may be put forward to explain this decrease, including closure of schools and universities initially limiting some social stressors (e.g. bullying, exams), or increased non-presentation at hospital (adolescents and young adults being the age group with the highest level of non-presentation [25]).

Two important exceptions to this overall decrease in self-harm hospitalizations have to be highlighted. First, a lack of decrease in hospitalizations (and for some age groups a slight increase) was

**Table 3**

Number of hospitalizations for self-harm in France in 2019 and 2020 (January to August only) according to the suicidal means, and the characteristics of hospital stays.

Means	N in 2020	N in 2019	Difference in N between 2020 and 2019	% change between 2020 and 2019	Risk Ratio (95% CI)
<b>Suicidal means</b>					
Drugs (X60-X64)	39,082	42,972	-3890	-9.1	0.91 (0.90–0.92)***
Alcohol (X65)	2693	2680	13	0.5	1.00 (0.95–1.06)
Violent means (X66-X82):	10,012	10,571	-559	-5.3	0.95 (0.92–0.97)***
Solvents, carbon monoxide, pesticides, other chemicals (X66-X69)	1359	1449	-90	-6.2	0.94 (0.97–1.01)
Hanging, strangulation (X70)	1658	1692	-34	-2.0	0.98 (0.91–1.05)
Drowning (X71)	135	129	6	4.7	1.05 (0.82–1.33)
Firearm (X72-X74)	356	296	60	20.3	1.20 (1.03–1.40)*
Fire, explosive (X75-X77)	145	198	-53	-26.8	0.73 (0.59–0.91)*
Sharp or blunt object (X78-X79)	5195	5708	-513	-9.0	0.91 (0.88–0.94)***
Jumping from heights (X80)	1034	936	98	10.5	1.10 (1.01–1.21)*
Jumping in front vehicle/crashing (X81-X82)	130	163	-33	-20.2	0.80 (0.63–1.00)
Other means (X83-X84)	1797	2333	-536	-23.0	0.77 (0.72–0.82)***
Hospitalization in intensive care	5894	5693	201	3.5	1.03 (0.99–1.07)
Death at discharge	759	703	56	8.0	1.19 (1.09–1.31)** <sup>S</sup>

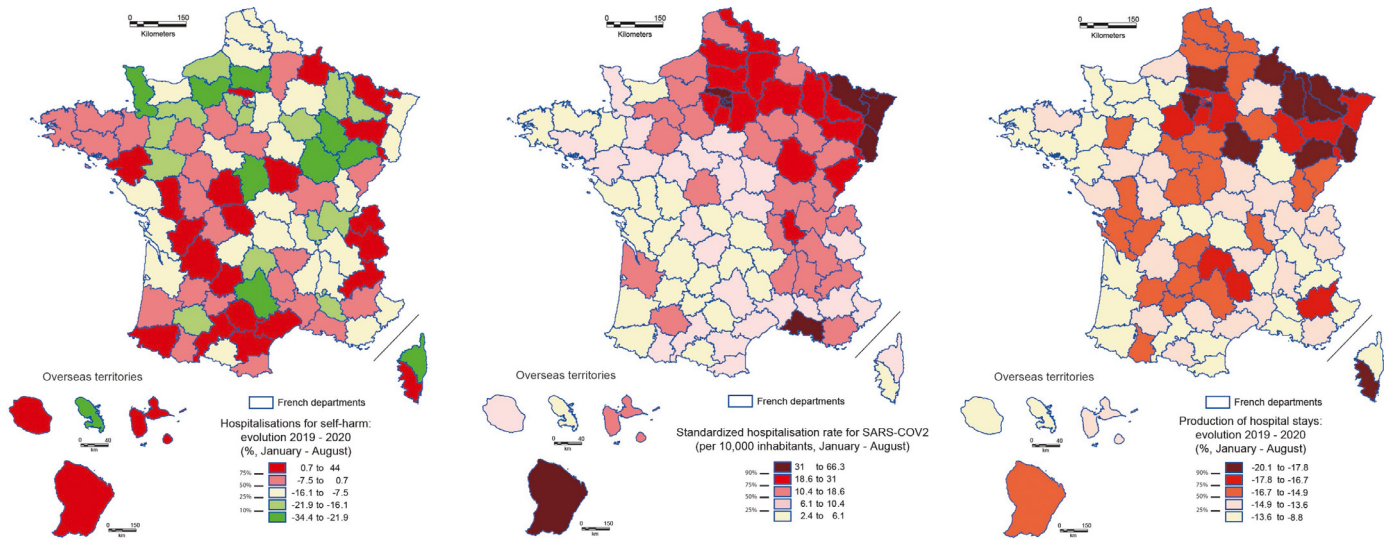
Footnotes : SD = Standard Deviation ; CI: Confidence Interval;

\*  $p < 0.05$ ;

\*\*  $p \leq 0.0005$ ;

\*\*\*  $p \leq 0.0001$ ;

<sup>S</sup> Risk Ratio from Poisson regression model; Hazard Ratio from Cox regression model.



**Fig. 3.** Maps of change in the number of hospitalizations for self-harm (left) or for all causes (right) from 2019 to 2020, and rates of hospitalizations for COVID-19 (center) in each French administrative department (1st January to 31st August only).

observed in individuals aged 65 and older, in both men and women. This age group has been the most impacted by the COVID-19 pandemic in terms of mortality and hospitalizations. It may also have particularly suffered from restrictions in travels and visits, favoring social isolation. Elderly may have been less able to connect to their families, using Internet for instance. In medicalized retirement houses (called EPAHD), a strict confinement with full ban on external visitors and cessation of shared meals between residents was ordered by the government, with potentially devastating consequences in terms of suicidal behaviors. A study by Hawton et al. (Hawton K, Lascelles K, Brand F et al. Self-harm and the COVID-19 pandemic: A study of factors contributing to self-harm during lockdown restrictions. *J Psychiatr Res* 2021; 137:437-443.) suggests that “cessation or reduction of services (including absence of face-to-face support), isolation and loneliness, reduced contact with key individuals, and disruption to normal routine” may explain many self-harming acts. Therefore, an increasing number of self-harming acts may have occurred in this age group in this context. Alternative (and non-exclusive) hypotheses may be that after a suicide attempt, elderly may have resorted to the emergency departments more frequently and may have been hospitalized more frequently than other age groups. Studies will have to shed light on this. Increased vigilance, care and social support to the elderly are necessary.

Moreover, we observed an increase in more severe suicidal acts, including a non-significant trend for more hospitalizations in intensive care for self-harm in 2020 than 2019, more self-harm using firearm or jumping from height, and more deaths at hospitals following self-harm. Of note, the increase was not observed for all violent means equally, which may be related to the confinement that limit access to and use of some specific means. The decrease in overall self-harm hospitalizations may therefore have mainly concerned less lethal acts while the number of some severe gestures of high lethality increased. This is a very concerning observation that may be confirmed in some months when data on deaths by suicide is available. Until then, suicide prevention programs and interventions should continue to be implemented and run.

Results presented here refer to the early period of the pandemic including the first confinement. Observations may be different during the following months. It is now obvious that the pandemic will likely last several more months (which led to a new confinement at the end of 2020), and many people find themselves in difficult financial

situations with limited hopes that the national economy will improve soon. Students have also been particularly affected by the situation in relation to disturbed conditions of courses, limited access to some jobs (e.g. in restaurants and bars), and reduced social life. Finally, the brain and psychological consequences of severe COVID-19 infection are still unknown. A 12-year follow-up of a cohort of individuals infected by the severe adult respiratory syndrome (SARS) outbreak in 2003 previously showed increased rates of mental disorders and suicide [27]. Regarding COVID-19, early investigations report an increase in signs of psychological distress in up to 40% of survivors [28] raising concerns about the long-term effects of the infection. Suicide prevention should therefore remain a priority, over both the short- and long-term.

While an important strength of this study is the exhaustive information about hospitalization for severe self-harm (e.g. necessitating a hospitalization) at a nationwide level, several limitations have to be underlined. Firstly, several cases of self-harm hospitalization may have not been identified. It has been shown that self-harm codes (X60-X84) are sometimes forgotten, primary codes (e.g. mental disorders) being favored. However, data loss seems limited (around 2%, personal communication). Furthermore, this may have limited impact on our findings as we were more interested in changes between 2020 and previous years than in absolute numbers. Moreover, we observed some opposite changes according to age group or suicidal means suggesting that modifications in coding quality that may have occurred between 2019 and 2020 are not likely to have impacted on the results reported here. Secondly, it is to date unknown if the pandemic and its related impact on hospital organizations during the first weeks may have also impacted the quality of diagnosis coding. Although the process is carefully monitored by hospitals, as it is used for billing their services, it cannot be totally ruled out. Thirdly, the level of information available in the administrative database prevented us from further analyses, for instance in terms of social isolation, physical violence, comorbid mental disorders, job loss, financial difficulties, etc. Mechanisms linking the COVID-19 pandemic and self-harm will have to be investigated.

In conclusion, we observed an overall decrease in the number of hospitalizations for self-harm in France during the COVID-19 pandemic. However, these results may be misleading and at-risk populations may need extra attention and care. Overall, suicide prevention should remain a priority. The coming months may also lead to a very different situation in terms of self-harm.

## DATA SHARING

This administrative data is only available through request from the French National System of Health Data (“*Système National des Données de Santé*”, SNDS), which manages this sensitive information (<https://www.snds.gouv.fr/SNDS/Accueil>), and cannot be shared.

## CONTRIBUTORS

Fabrice JOLLANT wrote the first draft  
 Adrien ROUSSOT conducted the analyses  
 Catherine QUANTIN initiated this work and supervised the analyses  
 All authors contributed to the discussion, read the manuscript and approved it.

## Declaration of interests

All authors have nothing to declare.

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