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The impact of the COVID-19 pandemic on suicide ideation and suicide attempts in a sample of psychiatric inpatients

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ABSTRACT

There has been little research reported regarding both suicide ideation and suicide attempts during the COVID-19 pandemic and government lockdown restrictions in Italy, one of the countries most affected by the pandemic. We investigated whether the frequency of suicide ideation and suicide attempts differed between psychiatric patients admitted to a psychiatric unit before and during the COVID-19 pandemic and government lockdown restrictions. We also assessed psychiatric diagnosis, length of hospitalization, and types of admission. We collected data on 632 psychiatric patients admitted to a public psychiatric clinic. Patients were divided into two different groups according to their admission before or during the COVID-19 pandemic. Our results showed that only suicide attempts, but not suicide ideation, were more frequent in psychiatric patients admitted during the COVID-19 pandemic than before. Furthermore, mood disorder diagnoses were more frequent during the COVID-19 pandemic than before the pandemic. The types of admission and the mean length of hospitalization did not differ between the two groups. In conclusion the present study results adds consistent knowledge on the phenomenon of suicide during the challenging time of the pandemic, pointing to continuing effort in suicide prevention measures.

1. Introduction

Italy's first official COVID-19 case was diagnosed on February 21, 2020. About one month later, the World Health Organization (WHO) declared COVID-19 a pandemic. On March 9, 2020, the Italian government imposed a national lockdown limiting the regular lifestyle habits of the population, except for trips for necessities, work, and health emergencies. The expected psychological consequences of the nationwide lockdown included fear of infection and becoming ill, frustration, and social isolation (Brooks et al., 2020). During the pandemic, COVID-19-related depression, anxiety, and stress also increased due to psychosocial stressors (Li et al., 2020; Liu et al., 2020). A higher frequency of anxiety and depressive disorders, sleep disturbances, post-traumatic symptoms, and other psychiatric conditions has been

found in healthy people and in people with pre-existing mental health disorders (Fiorillo et al., 2020; Moreno et al., 2020). Furthermore, the COVID-19 pandemic and lockdown worsened previous mental health symptoms and limited access to mental health services (Yao et al., 2020). Psychiatric symptoms, including depression and insomnia, were also reported in health care professionals and general practitioners, most likely a result of the physical and psychological pressures created by the COVID-19 pandemic (Amerio et al., 2020; Preti et al., 2020).

Suicide risk is impacted by many different psychiatric, psychological, social, and relational factors (Turecki and Brent, 2016; Pompili et al., 2019), and the impact of the pandemic on vulnerable individuals may have increased suicide risk (Pompili, 2020). Studies on previous epidemics, such as the severe acute respiratory syndrome (SARS), have reported a short-term decrease in suicide risk, perhaps the result of a

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“honeymoon period” or “pulling together” phenomenon (Joiner et al., 2006). However, Yip et al. (2010) conducted a study during the SARS epidemic in Hong Kong and reported a higher incidence of suicides linked to social disengagement and mental stress and anxiety. During the COVID-19 pandemic, increased suicide rates in the early months of the pandemic were not reported in several countries, including the USA, Australia, England, Japan, Norway and Switzerland (Faust et al., 2021; Coroners Court monthly suicide data report 2020; Ambrosetti et al., 2021). Although research on this issue is appearing steadily (e.g., Knudsen et al., 2021; Papadopoulou et al., 2021), data are still scarce regarding suicide ideation and suicide attempts during the COVID-19 pandemic in many European countries, including Italy, one of the countries most affected by the pandemic (Boldrini et al., 2021; Hawton et al., 2021; Mortier et al., 2021). Therefore, studies on suicide attempts and suicide ideation during the COVID-19 pandemic could provide helpful information on the effects of the pandemic on mental health.

Following the hypothesis that the COVID-19 pandemic increases known risk factors for several mental health conditions and that many of these are also risk factors for suicide ideation and attempt, the present study aimed to see whether the frequency of suicide ideation and suicide attempts differed in psychiatric patients before and during the COVID-19 pandemic and government lockdown restrictions. In addition, we examined whether patients differed in terms of psychiatric diagnosis, previous hospitalization, previous suicide attempt, mean duration of hospitalization, and frequency of compulsory admission before and during the COVID-19 pandemic.

2. Methods

2.1. Participants

We retrospectively reviewed the clinical records of 632 adult psychiatric inpatients consecutively admitted to the psychiatric unit of Sant'Andrea University Hospital between May 2019 and December 2020. Inclusion criteria were adult inpatients aged ≥ 18 years admitted to the psychiatric unit and a psychiatric diagnosis based on the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5; APA, 2013). Exclusion criteria included the presence at the admission of degenerative neurological disease or cognitive deficits that did not allow for collecting data during the psychiatric interview. In addition, patients with incomplete clinical records and patients with excessive sedation were excluded from the study.

Two researchers prepared, following the study's main objectives, an ad-hoc checklist to gather the principal characteristic of the sample. The following variables were collected from clinical records: sociodemographic data (age, sex), diagnosis (mood disorders, schizophrenia, and psychotic disorders, personality disorders, other disorders), previous hospitalizations, previous suicide attempts or suicide ideation as a reason for hospital admission, type of admission (compulsory or voluntary), and duration of hospitalization. A psychiatrist decided on patient diagnoses during the first two days of hospitalization, based on the diagnostic criteria of the DSM-5 (APA, 2013).

The presence of a suicide attempt was investigated at the time of arrival of the patient at the emergency department and at the admission in the psychiatric ward by a psychiatrist trained in the assessment of suicide risk. A suicide attempt is defined as a non-fatal, self-directed, potentially injurious behavior with an implicit or explicit intent to die. The behavior may or may not result in injury, and the intensity may vary, but the decision to act out the lethal intent must be present (Silverman et al., 2007a; 2007b). Furthermore, according to the definition of suicide ideation adopted by Posner et al. (2007) in the Columbia-Suicide Severity Rating Scale (C-SSRS), that is, thoughts about wish to be dead or active thoughts of wanting to end one's life, a trained psychiatrist assessed suicide ideation when the patient arrived at the emergency department and on admission in the psychiatric ward.

All participants signed a written informed consent form. As the

assessment of psychiatric patients with particular attention to suicide attempts is part of several investigations approved by the local ethics review board, the present study was conducted as part of ongoing research activities in this area.

2.2. Statistical analysis

All statistical analyses were performed with the Statistical Package for Social Sciences (SPSS 25.0). The sample was divided into two groups based on their date of admission to the psychiatric ward. One group of 315 patients was admitted before the lockdown (from May 2019 to March 9, 2020), while the second group of 317 patients was admitted during the COVID-19 pandemic (from March 10, 2020 to December 2020). Fisher exact tests and chi-squared (χ^2) tests were used for the 2×2 and $N \times N$ contingency tables, respectively. Independent sample t-tests were used to evaluate the differences between the groups; in the case of non-parametrical data, the Mann-Whitney test was used. Furthermore, a binary regression analysis model with the two groups as a criterion was used to identify variables associated with the date of admission. All tests were considered to be statistically significant with a p-value < 0.05 .

3. Results

The sociodemographic and clinical characteristics of the patients are reported in Table 1. The total sample consists of 632 inpatients, 311 women and 321 men. The mean age of the patients was 42.25 years (standard deviation (SD) = 15.3; age range = 18–82 years). When patients of both groups were considered together, 21.0% of patients had previous suicide attempts. Suicide attempts were the reason for hospital admission in 16.1% of patients, while suicide ideation was the reason for hospital admission in 31.5% of patients. Psychiatric diagnoses for the total sample were: bipolar disorder (22.9%), depressive disorder (13.9%), schizophrenia and other psychoses (29.4%), personality disorders (10.4%), and other disorders (23.3%). In addition, 63.6% of the total sample had a previous hospitalization, and 20.1% were admitted compulsorily. The mean length of hospitalization was 10.78 days (SD =

Table 1
Differences between groups.

Variables	Pre-COVID-19 (N = 315)	During COVID-19 (N = 317)	Whole sample (N = 632)	Test	P
Sex (female,%)	49.2%	49.2%	49.2%		1.0
Age M SD	42.12 \pm 15.2	42.4 \pm 15.3	42.25 \pm 15.3	t= -0.220	.826
Diagnosis				$\chi^2 = 16.502$.002**
Bipolar disorder	21.1%	24.0%	22.9%		
Depressive disorder	9.5%	18.3%	13.9%		
Schizophrenia and psychoses	34.0%	24.9%	29.4%		
Personality disorders	8.9%	12.0%	10.4%		
Other	25.7%	20.8%	23.3%		
Previous hospitalization (yes)	64.8%	62.5%	63.6%		.564a
Previous suicide attempt (yes)	19.4%	22.6%	21.0%		.371a
Current suicide attempt (yes)	13.0%	19.2%	16.1%		.040a*
Current suicidal ideation (yes)	29.5%	33.4%	31.5%		.305a
Compulsory admission (yes)	22.2%	18.0%	20.1%		.198a
Length of hospitalization (days)	10.11 \pm 6.8	11.44 \pm 8.5	10.78 \pm 7.7	U = 45,528	.055

a= One-Way Fisher exact test.

7.71).

Comparing the two groups of patients before and during the COVID-19 pandemic, we found that suicide attempts as a reason for the hospital admission were more frequent during COVID-19 than before the pandemic (19.2% vs. 13.0%, $p < 0.05$) while no difference was found for suicide ideation (33.4% vs. 29.5%, $p = 0.289$). Depressive disorder diagnoses were more frequent during COVID-19 than before the pandemic (9.5% versus 18.3%; $\chi^2 = 16.502$; $p < 0.01$). Lastly, the types of admission and the mean length of hospitalization did not differ between the two groups (Table 1).

Binary regression analysis model with groups as a criterion (not reported in the table) was used to evaluate variables associated with the date of admission (i.e., diagnoses, previous suicide attempt, previous suicide ideation, current suicide attempt and ideation). The results showed that only suicide attempt as a reason for the hospital admission was associated with the admission during COVID-19 (Nagelkerke $R^2 = 0.43$, $\chi^2 = 20.189$, $p < 0.01$). Specifically, compared with patients admitted before COVID-19, those who were admitted during COVID-19 were more likely to have a current suicide attempt (O.R. = 1.79, 95% C.I. 1.06–3.05), while diagnoses, previous hospitalization, and suicide ideation were not significant in the regression model.

4. Discussion

The present study indicated that only suicide attempts, and not suicide ideation, were more frequent in the psychiatric hospital admission during the COVID-19 pandemic than before. This was confirmed by the regression analysis. In addition, mood disorder diagnoses were more frequent during the COVID-19 pandemic than before.

Several studies have evaluated differences in psychiatric hospitalizations in Italy during and after the lockdown (Beghi et al., 2020; Boldrini et al. 2020; Clerici et al., 2020; Castelpietra et al., 2021), but only one study evaluated differences in suicide ideation as the reason for the hospitalization. Boldrini et al. (2021) reported a 35% increase in suicide ideation in patients during the post-lockdown period (i.e., May 1–June 30, 2020), as compared to the rates observed in 2018 and 2019. However, that study did not investigate possible differences in suicide attempts.

Our findings indicated a higher frequency of suicide attempts due to the hospitalization in a psychiatric ward during the COVID-19 pandemic. Indisputably the COVID-19 pandemic has influenced suffering among individuals in general (Pompili, 2021), and several factors may have influenced suicide attempts in psychiatric patients during the COVID-19 pandemic, including loss of employment, financial stressors, domestic violence and alcohol consumption, (Gunnell et al., 2020).

The results of research on suicide rates during the COVID-19 pandemic are presently inconsistent and reveal that the impact of COVID-19 on suicide rates has not been uniform across countries (Appleby, 2021; Pirkis et al. 2021; Sakamoto et al., 2021). Furthermore, empirical investigation of COVID-19 related suicide ideation and the suicide attempt has been limited (Dubè et al. 2021; Elbogen et al., 2021; O'Connor et al. 2020). Dubè et al., in a meta-analysis, demonstrated an increase in suicide ideation, suicide attempts, and self-harm during the COVID-19 pandemic, suggesting that being younger and female are vulnerability factors for suicide ideation (Dubè et al., 2021). However, these results are not in agreement with a recent systematic review that did not report an increase in suicide behaviors, suicide attempts and suicide ideation during the pandemic (John et al., 2020). O'Connor et al. (2020) found higher suicide ideation during the initial weeks of lockdown, while Elbogen et al. (2021), in a national survey in the United States, assessed the association between mental health symptoms, social isolation, financial stressors, and suicide ideation during the early month of COVID-19 pandemic (Elbogen et al., 2021).

Preliminary data have suggested that psychiatric patients might experience depression, anxiety, insomnia, and other psychiatric

symptoms during the COVID-19 pandemic (Xiang et al., 2020; Gómez-Ramiro et al., 2021). Furthermore, patients with mental disorders consulted psychiatric services less frequently during the pandemic (Montalbani et al., 2021) than before, probably aggravating their emotional and psychological pain. All these factors may contribute to the increased frequency of suicide attempts reported in the present study. However, we found no differences in suicide ideation between the two groups.

We found a higher frequency of suicide attempts during the COVID-19 pandemic, and this may have several possible explanations. First, in Italy, national and local healthcare agencies recommended limiting admission to only the most severe cases in order to reduce the risk of hospital COVID-19 contagion (Starace and Ferrara, 2020). Thus, patients may have presented to the emergency department only when they had made a potentially harmful behavior that could put the patients' physical health at risk. Second, Joiner's theory of suicide postulates that three different components (thwarted belongingness, perceived burdensomeness and acquired capability of suicide), when present simultaneously, lead to suicide attempts (Joiner, 2005). The COVID-19 pandemic lockdown strategies and quarantine may have exacerbated experiences of social isolation, perceived expendability, and exposure to suffering, all factors related to the three dimensions of the Interpersonal Theory of Suicide (Sheffler et al. 2021). Furthermore, the acquired capability to die by suicide is moderated by several factors including pain, injury, and the death of others. Thus, the COVID-19 pandemic may have increased the acquired capability to die by suicide as a result of exposure to suffering and death (Sheffler et al. 2021).

Notably, our study demonstrated that depressive disorder diagnoses were more frequent during the COVID-19 pandemic than before the pandemic. Several studies have reported that fear of COVID-19, uncertainty about the future, stigma, and social isolation are significant psychological stressors that may interact to determine psychopathological outcomes, including mood disorders (Brooks et al., 2020; Carvalho et al., 2020). Although several studies did not find differences in depression, anxiety, and stress in psychiatric patients during the pandemic (e.g., Wang et al., 2020), a meta-analysis demonstrated that depression in the general population might be 7 times higher during the COVID-19 pandemic (Bueno-Notivol et al., 2021). However, caution is needed when interpreting these results since assessment tools and the criteria used to identify affective disorders might differ greatly among countries.

Finally, there were no differences in the number of admissions, voluntary versus compulsory admissions, and in the mean duration of hospitalization during the two periods investigated in contrast to other research that has reported a reduction in psychiatric admissions during the pandemic (Boldrini et al., 2021; Ambrosetti et al., 2021). Different times of observation and the number of days may explain differences in the results of different research studies. We enrolled patients in the period immediately after the national lockdown and characterized by different types of restrictions in Italy during several months. Furthermore, the two subgroups included in the present study did not overlap in terms of explanatory variables such as seasonality which is known to be linked to suicide risk (Aguglia et al., 2019). Moreover, differences with other studies (Boldrini et al. 2020) possibly reflect the different organization of the psychiatric unit in Italy during the pandemic.

The present study has several limitations. First, the sample size refers to a single Italian hospital in Rome and may not represent the entire country. Second, the retrospective nature of the study did not allow us to determine causation, only association. Thus, the psychopathological symptoms that led to hospitalization were not investigated. It was not possible to confirm a link with the pandemic and the presence of and reactions to restrictions (fear of contagion, isolation, economic problems). Furthermore, the lethality of the suicide attempts was not assessed. Psychometric tools were not used to assess symptom severity and the presence of any other psychopathological dimensions that could have affected suicidal ideation and suicide attempts. Finally, we did not assess meteorological factors (seasonality, photoperiod, temperature)

occurring independently of the pandemic.

In conclusion, the present results demonstrate that, in our sample of psychiatric patients, suicide attempts, but not suicidal ideation, were more frequent during the COVID-19 pandemic than before. Since studies on previous pandemics have suggested that an increase in psychiatric disorders and suicidal ideation and attempts may appear months after the epidemic, clinicians should investigate and monitor suicide risk in patients with psychiatric disorders over long periods of time.

Author agreement

All authors have seen and approved the final version of the manuscript being submitted. They warrant that the article is the authors' original work, hasn't received prior publication and isn't under consideration for publication elsewhere.

Author statement

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