Letter to the Editor

A pre-post comparison study of emergency mental health visits during the COVID-19 lockdown in Lombardy, Italy

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We submit this letter as a response to your call for papers "Mental health issues associated with COVID-19 outbreak". Our letter pertains, out of the nine fields available in your journal, to the "Social Psychiatry and Epidemiology" field.

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Lombardy was the first and most severely affected Italian region by the COVID–19 pandemic [1]. A strict lockdown was enforced between March 8th and May 3rd 2020, during which public health authorities advised the population to limit their use of hospitals and emergency rooms (ERs). Although previous evidence is lacking, patients with mental disorders may be less prone to comply with the social distancing and preventive measures enforced during such a lockdown. Unlike the majority of other clinical services, Mental Health Departments were required to continue their activity throughout the outbreak and to limit patients' access to hospitals through alternative outpatient interventions [2].

We used a register-based, pre-post approach to examine the effectiveness of such efforts, as well as the compliance of patients with mental disorders to the instructions received. We chose the March 8th lockdown as our index event (T0) and compared Emergency Department visits for mental health-related conditions at the San Paolo University Hospital in Milan, Italy during lockdown (March 9th – May 3rd 2020) and in the previous two months (January 13th – March 8th), i.e. 8 weeks before and after T0. We determined the percentage variation in the total number of ER visits and across subgroups, based on demographics, main diagnosis at discharge (clustered according to DSM-5) and discharge destination (e.g. home, admission to the psychiatry ward). Finally, we used the number of psychiatric emergency visits during the same 16 weeks of the previous year (January 13th – May 3rd, 2019) as comparison. This was done to exclude the presence of habitual variations in ER visits during this time of the year, that would in case be considered independent from the lockdown. Having clustered ages in three groups (18-29, 30-59, 60+), all variables under study were compared using Pearson's chi-squared test with statistical significance set at $p<0.05$. Approval for the purpose of this study was obtained from the Hospital management.

Our data revealed a sharp reduction in psychiatric ER visits during lockdown compared to the previous eight weeks. The total number of visits fell by 43%, from n=398 pre-T0 to n=227 post-T0 ($p<0.001$). In the same period of 2019, no

difference could be observed in the number of ER visits before and after March 8th, 2019 (n=393 between January 13th – March 8th, n=426 between March 9th – May 3rd, 2019). This suggests that patients with mental health issues did comply with the request to limit ER use. As shown in Figure 1 however, the most notable drop in ER visits occurred two weeks prior to the lockdown, when the Ministry of Health issued recommendations to spontaneously restrict hospital access after the first Italian cases in Lombardy. A substantial reduction in ER use was maintained throughout the lockdown, although the number of visits raised approximately half-way towards pre–pandemic levels during the second month. This may reflect several possibilities, among which a gradual loosening in patients' tendency to avoid hospitals and the emergence of COVID–19-related mental health issues.

After dividing ER visits into subgroups based on diagnosis at discharge, some differences may be observed among diagnostic categories. Overall, a significant decrease in ER visits after lockdown was observed for psychotic disorders (-46%, p<0.001), mood disorders (-58%, p<0.001), anxiety disorders (-49%, p=0.011) and "other" conditions e.g. OCD, neurocognitive disorders (-57%, p<0.001). In particular, psychotic disorders composed 21.4% of total ER visits pre-T0 and 20.3% post-T0; mood disorders 16.3% and 11.9% respectively; anxiety disorders 10.3% and 9.3% respectively. For personality disorders, a statistical trend of decline was observed (-29%, p=0.066), unlike alcohol and substance abuse disorders (-27%, p=0.297) and, most notably, for trauma- and stressor-related disorders (-7%, p=0.785). Indeed, the relative frequency of these three categories grew from 17.3% to 21.6% for personality disorders, from 6.5% to 8.4% for alcohol and substance abuse disorders, and from 7.0% to 11.5% for stressor-related disorders. Stress-related disorders reduced by only two cases after lockdown (28 to 26), despite total cases falling by 43%. We interpret this finding as preliminary evidence of an increase in these mental health emergencies related to the COVID-19 pandemic and lockdown. Personality disorders appear to represent the only group with limited compliance to restrictive measures. This might reflect a lower propensity to observe social norms and low frustration tolerance in the so–called Cluster B group of patients. Furthermore, the stability of substance use disorder diagnoses might be explained by their frequent comorbidity with personality disorders on one hand, and the possibility of self-medication attempts to cope with acute stress on the other. No significant differences in the reduction were found between subgroups based on gender (p=0.102), age group (p=0.594) or destination upon discharge from ER (p=0.742).

Our findings should be considered preliminary and interpreted with caution due to the following limitations: first, data were collected in a single ER, so they might reflect characteristics of the catchment area rather than a general regional trend. However, our findings are in line with the reduction of hospital admission rates for psychiatric diagnoses reported by other four mental health departments in Lombardy [3]. Second, no information was available on patients with mental health issues who reached the hospital with an overarching COVID-19–related medical problem. Third, the short period of observation might have masked substantial epidemiological phenomena that will be clarified in upcoming months. Indeed, further studies over longer time periods will be necessary to assess the effects of the COVID-19 pandemic and lockdown on mental health and mental health service use more extensively.

In conclusion, this study shows that a) ER visits for mental health-related conditions were successfully reduced during lockdown by almost 50% b) ER visits fell two weeks before lockdown, just as the Italian pandemic broke out, and began to rise again during the second month of lockdown, c) these variations in the number of ER visits are not observed in the corresponding period of 2019 d) the decrease in ER use involved all diagnostic categories except for personality disorders, alcohol and substance abuse disorders and particularly for trauma- and stressor-related disorders.

Declaration of Competing Interest

The Authors declare that there is no conflict of interest.

References

[1] De Girolamo G, Cerveri G., Clerici M, et al. Mental Health in the Coronavirus Disease 2019 Emergency-The Italian Response. JAMA psychiatry 2020; https://doi.org/10.1001/jamapsychiatry.2020.1276

[2] D'Agostino A, Demartini B, Cavallotti S, Gambini O. Mental health services in Italy during the COVID-19 outbreak. Lancet Psychiatry 2020;7(5):385-387.

[3] Clerici M, Durbano F, Spinogatti F, et al. Psychiatric hospitalization rates in Italy before and during COVID–19: Did they change? An analysis of register data. Ir J Psychol Med 2020 DOI: 10.1017/ipm.2020.29.

Fig. 1 Weekly number of visits to the San Paolo Hospital Emergency Room (ER) due to a psychiatric condition between January 13th, 2020 and March 5th, 2020 (8 weeks before and 8 weeks after the COVID-19 lockdown start in Lombardy on March 8th, 2020) and in the same timeframe of 2019 (January 13th – March 5th, 2019). Before March 8th, the weekly number of visits is comparable in the two years of observation (n=393 in 2019, n=398 in 2020); after March 8th, the number of ER visits is significantly lower in 2020 compared to 2019 (n=426 in 2019, n=227 in 2020, $p<0.001$).

21/02/2020: First case of COVID-19 in Lombardy region

08/03/2020: Start of COVID-19 lockdown in Lombardy region

2019

2020

Weekly number of visits

100
90
80
70
60
50
40
30
20
10
0

-8 -7 -6 -5 -4 -3 -2 -1 1 2 3 4 5 6 7 8

Week