

# Trends in consultations for schizophrenia and non-affective psychoses in Italian emergency departments during and after the 2020 COVID-19 lockdown.

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## **Abstract**

### *Aims*

To analyse the hospital emergency department (HED) consultations for schizophrenia-spectrum disorders in nine Italian hospitals during the 2020 lockdown and post-lockdown periods, compared to the equivalent periods in 2019.

### *Methods*

Characteristics of consultations, patients, and drug prescriptions were analysed. Joinpoint models were used to identify changes in the weekly trend of consultations.

### *Results*

During the 2020 lockdown the overall number of HED consultations for schizophrenia decreased by 40.7% and after the lockdown by 12.2% compared with 2019. No difference was found in the proportion of consultations that led to GHPU admissions or compulsory admissions. Suicidality rates did not differ across the two years, with the exception of ideations and plans (+5.9%) during the post-lockdown period. We found an increase in benzodiazepine prescriptions in 2020 during the lockdown and post-lockdown periods (+10.6% and +20.8%, respectively), and a decrease of prescriptions for short-acting sedative agents in the post-lockdown period (-7.9%). An increase in the weekly trend of consultations occurred from March 11-17 (week 11) to June 26-June 30 (week 26). As a result, the initial gap in the number of consultations between the two years cancelled out at the end of June.

### *Conclusions*

HED consultation rate for schizophrenia-spectrum disorders declined consistent with that of other psychiatric disorders. In the post-lockdown period the growth of suicidal ideation/planning and increase in the prescriptions of anxiolytic-sedating drugs may foreshadow that for some schizophrenia patients the exit from the lockdown period is not liberating, but rather a source of agitation or perturbation.

**Keywords:** acute treatment, sedative drugs, pandemic, suicidality, aftermath of lockdown

## Introduction

The impact of the COVID-19 pandemic on mental health services has been investigated in several studies at local, regional and national level. In particular, several studies have analysed access to hospital emergency departments (HED) to estimate the consequences of the 2020 pandemic lockdown on the number of psychiatric consultations<sup>1,2,3,4</sup>. All studies to date have indeed agreed on a general decrease in psychiatric consultations compared to the previous year. In addition, studies investigating the period after the lockdown have found a gradual raise in the number of psychiatric consultations, which not always reached 2019 levels.

In Italy, the effects of the pandemic on psychiatric admissions in HEDs have been first analysed in the Lombardy region<sup>5,6</sup>, the most affected initially by the pandemic, and subsequently using data from several Italian regions<sup>7</sup>.

Psychiatric access to HEDs is an important litmus test of the ability of community psychiatric services to respond to the impact of a dramatic occurrence such as a pandemic, and this is particularly true in Italy, where mental health management is largely based on the community. Furthermore, since mental health services are organized to cope with the need of patients with severe psychiatric disorders, in particular those with schizophrenia, investigating the extent to which these patients access the HEDs for an onset of acute symptoms or relapse is particularly relevant. In fact, the frequent use of emergency services would suggest a weakness of mental health services, which have not been able to prevent or manage the relapses of patients being treated by the community mental health centers (CMHCs).

The aim of this study was to analyze the frequency and characteristics of HED consultations for schizophrenia spectrum disorders in nine Italian hospitals during the 2020 lockdown and post lockdown periods, compared to the equivalent periods in 2019.

## Materials and Methods

In March 2020, Italy was the European country with the highest incidence rate of COVID-19 cases. On 9 March 2020, the first day of lockdown, there were 9,172 cases with 463 deaths, while on 18 May 2020, at the end of the lockdown period, the cumulative number of cases was 225,886 and deaths were 32,007. We analysed the trends of HED psychiatric consultations for schizophrenia and non-affective psychoses (NAP) during the 2020 lockdown and the post-lockdown periods and compared them with those of the equivalent periods of 2019.

From an organizational point of view, in the hospital HED doctors can request a psychiatric consultation for the management of the acute phase of the disease and to assess the need for admission to the psychiatric unit of the general hospital (GHPU). Normally patients are hospitalized in GHPU on a voluntary basis, but there are conditions that require compulsory hospitalization which are carried out according to the rules established by Italian law n. 833/1978.

Information on consultations was retrospectively collected from the administrative databases of 9 Italian Health Authorities, 4 of which were in Lombardy Region, the first hit by COVID-19 pandemic in Italy. Patients with schizophrenia and other non-affective psychoses were extracted from the database using the ICD-9 codes 295.1-9; 297; 298.3-4.

The lockdown encompassed the period 9 March and 17 May 2020, while the post-lockdown period ranged between 18 May and 30 June 2020. Data were analysed using an anonymous patient identifier in accordance with the Data Protection Act (EU Regulation 679/2016).

Percentage differences in the number of consultations between two periods were computed as

$\frac{n_1 - n_2}{n_1}$ . The frequency distribution of categorical variables was compared between two years

using chi-square test, followed by post-hoc comparisons at  $p < 0.05$  if the omnibus test was significant and the number of cells was higher than 4.

Changes in the slopes of weekly psychiatric consultations within the same year and between years were investigated using joinpoint models. Weekly counts of HED psychiatric consultations were modelled as a function of the week using a Poisson model of variation. The significance of the percentage rate changes within the observation periods was tested using a Monte Carlo Permutation method. The joinpoint regression curves of HED psychiatric consultations were compared between the two periods using the parallelism test, that investigates whether two joinpoint regression functions are parallel. Rejection of the null hypothesis of parallelism suggests that regression curves change their slope at different time points during the observation period. Statistical analyses were carried out using IBM SPSS, version 25.0. The trend of HED psychiatric consultations was analysed using the Joinpoint Trend Analysis Software 4.8.0.1 (Statistical Research and Applications Branch, National Cancer Institute, USA).

This study was conducted on behalf of the National Coordination of Italian Psychiatric Diagnostic and Treatment Services, section of the Italian Society of Psychiatry, and it was approved by the ethics committees of Bergamo (Reg. Sperim. N.260/20) and Udine (CEUR-2021-OS-05), Italy.

## Results

The number of patients with schizophrenia seen in HED consultations dropped from 217 in 2019 to 134 in 2020 during the lockdown, which amounts to a 38.2% reduction. After the lockdown, the number of patients decreased from 142 to 125 (-12.0%). No difference was found between the two periods of 2019 and 2020 in the demographic characteristics and medical history of patients (Table 1).

As to HED consultations for schizophrenia, including multiple consultations to the same patients, during the lockdown 241 consultations were recorded in 2019 and 143 in 2020, that amounts to a

40.7% reduction. After the lockdown, the number of consultations decreased from 155 to 136, corresponding to a 12.2% reduction. Table 2 shows the percentage of consultations for specific disorders over the total number of psychiatric consultations in the two periods of 2020 vs. 2019. During the lockdown, the relative percentage of consultations for schizophrenia remained stable, while for anxiety, mood, and adjustment disorders decreased, and those for substance use disorders increased.

No difference was found in the proportion of consultations that led to GHPU admissions or compulsory admissions during and after the lockdown period (Table 3). Schizophrenia patients showed a non-significant trend of increased use of drugs of abuse. Suicidality was also not different across the two years, with the notable exception of increased rates of ideations and plans (+5.9%) during the post-lockdown period.

As to the drug prescriptions, an increase was found in benzodiazepine in 2020 in the lockdown and post-lockdown periods (+10.6% and +20.8%, respectively), counterbalanced by a decrease of prescriptions for short-acting sedative agents (ketamine/propofol/midazolam) in the post-lockdown period (-7.9%).

Figure 1 shows the weekly trend of consultations during the observation period in 2020 and the equivalent period of the year 2019. The trend in 2019 was stable over time, with a slight, non-significant increase. As to the annual trend in 2020, a significant raise in the number of consultations occurred from week 11 (March 11-17) to week 26 (June 26-June 30). As a result, the initial gap in the number of consultations between the two years decreased over time and cancelled out at week 26.

## **Discussion**

This is the first national-level study to investigate the impact of pandemic COVID-19 on psychiatric admissions to HED of patients with a primary diagnosis of schizophrenia and NAP. This study is part of a more general Italian study on the impact of lockdown on the psychiatric consultations in HED <sup>7</sup>.

Other local studies have investigated these aspects, without focusing specifically on the diagnosis of schizophrenia. In Italy, two studies were carried out in Lombardy, with contrasting results: Stein et al.<sup>8</sup> found in Milan a decrease in HED consultations for psychotic disorders (-46%) during the 2020 lockdown period compared with the previous 2020 period, not different from that found for other psychiatric disorders. In contrast, Clerici et al.<sup>5</sup> in seven wards in the same region reported that the decrease in admission rates observed for schizophrenia spectrum disorders did not reach statistical significance. In Emilia-Romagna one study reported a greater decline in HED consultations for psychoses than for other disorders<sup>9</sup>.

Evidence from studies carried out in other countries is mixed regarding the decrease in consultations for schizophrenia spectrum disorders. Specifically, in Portugal Gonçalves-Pinho et al.<sup>10</sup> found that schizophrenia and other psychotic disorders had the smallest percentage decrease (-9.8%) in consultations with respect to the year 2019 compared with that found for overall psychiatric consultations (-52.2%). In Spain, Gomez-Ramiro et al.<sup>11</sup> found a decrease in overall emergency admissions (-37.9%) after the lockdown without significant differences for psychoses and affective disorders. In Switzerland, Ambrosetti et al.<sup>12</sup> reported fewer total psychiatric admissions to the HED during the pandemic period (-17.5%) than in 2016, with a significant reduction of the percentage of psychotic episodes (-7.9%) over the total number of HED psychiatric consultations. In contrast, in Australia (Melbourne), Jagadheesan et al.<sup>13</sup> in a comparison between six-month periods in 2020 and 2019 reported that the total number of patients with a serious mental illness (psychotic or mood disorders) in the control and lockdown periods were comparable, but the percentage of psychotic disorders was higher in 2020 (+6.8%). In Israel, Pikkal Igal et al.<sup>14</sup>, comparing the same months in 2018, 2019 and 2020, found a 30% decrease in overall HED psychiatric consultations with a higher proportion of psychoses in 2020 than in other years (+2.8%).

In summary, most published data indicate that HED consultation for schizophrenia and related disorders decreased during the 2020 pandemic at a rate similar to other psychiatric disorders. Still



few studies investigated what happened after the lockdown. In one study carried out in Emilia Romagna, the comparison of the lockdown and the post-lockdown periods with those of the previous year indicated 54% and 38% reductions in consultations for mental disorders<sup>15</sup>.

Similarly to other studies, during the 2020 lockdown period we observed a 40% decrease of consultations for schizophrenia and NAP, consistent with the general reduction in the accesses to HEDs related to the fear of moving out of one's home and getting in touch with SARS-CoV-2 positive persons. On the other hand, the restrictive measures had an impact on all consultations but did not affect in particular schizophrenia or NAP patients, who remained stable at a proportion of about 12% of total psychiatric consultations. Furthermore, during the lockdown no increase was found in the rate of schizophrenia or NAP patients who had a history of previous psychiatric hospitalization, a current severity that required GHPU admissions on a voluntary or compulsory basis, substance use or suicidality, suggesting that those seeking treatment at the HED were not a subset comprising the most severe cases. The only difference was in BDZ prescription rates, which could be related to a higher level of agitation during the lockdown, without necessarily implying a worsening of psychotic symptoms.

As to the post-lockdown period, we still observed a 12% reduction of psychiatric consultations as compared with 2019. The weekly trend analysis showed that the gap between the two years decreased over time and almost cancelled out at week 26. During this period, however, there was a recrudescence of acute severe cases, as suggested by an increase in suicidal ideation and planning and a significant increase in the use of benzodiazepines and short-acting sedative agents (ketamine/propofol/midazolam), as well as a trend towards increased use of antidepressants. As already noted, the paucity of other research studies on the period following lockdown does not allow comparison with other studies.

Taken together, our results indicate that during the 2020 lockdown, HED consultation rate for schizophrenia and NAP patients declined consistent with that for consultations for other psychiatric

disorders. This could be due to the ability of these patients to be resilient in the face of external calamities, but may be related to the fact that community psychiatric services continued to function as usual. As shown in one of the regions involved in this study (Friuli-Venezia Giulia), outpatient services continued in fact to work normally during the emergency and mostly complied with the indicators in the month after the publication of regional recommendations<sup>16</sup>.

The fact that there was no upward rebound in the number of consultations in the HEDs in the period following the lockdown also seems to testify that outpatient services fulfilled their mandate by preventing an increase in the demand for HEDs once the restrictive measures were discontinued.

On the other hand, our results indicate that the post-lockdown period is more critical than the lockdown period for some patients. The increase in consultations for suicidal ideation/planning and in the prescriptions of anxiolytic-sedating drugs would foreshadow that some schizophrenic patients the exit from the lockdown period is not liberating, but rather a source of agitation or perturbation. On this basis, we argue that the attention of mental health services to schizophrenia and NAP patients should remain high even at the end of critical periods.

### **Conflicts of Interest**

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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None

### **Ethical Standards**

This study has been performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments. The study was approved by the ethics committees of Bergamo (Reg. Sperim. N.260/20) and Udine (CEUR-2021-OS-05).

### **Availability of Data and Materials**

Data supporting the results of this study are available from the first Author upon request.

Table 1. Patient characteristics by period and year

		Lockdown period				Post-lockdown period					
		2019		2020		p-value	2019		2020		p-value
		(N=217)		(N=134)			(N=142)		(N=125)		
<b>Current age (years), mean±SD</b>		43.3	15.9	42.6	15.3	0.460	44.1	15.3	43.0	15.9	0.316
<b>Gender, N %</b>	<b>Female</b>	79	36.4%	60	39.6%	0.119	57	40.1%	58	46.4%	0.303
	<b>Male</b>	138	63.6%	74	55.2%		85	59.9%	67	53.6%	
<b>Marital status, N %</b>	<b>Married/living with partner</b>	28	12.9%	23	17.2%	0.403	21	14.8%	25	20.0%	0.093
	<b>Unknown</b>	72	33.3%	33	24.6%		34	23.9%	16	12.8%	
	<b>Single</b>	103	47.5%	69	51.5%		77	54.2%	71	56.8%	
	<b>Separated/Divorced</b>	13	6.0%	9	6.7%		10	7.0%	13	10.4%	
	<b>Widow</b>	1	0.5%	0	0.0%		0	0.0%	0	0.0%	
	<b>Working status, N %</b>	<b>Never employed</b>	40	28.2%	20	20.6%	0.177	24	25.8%	30	30.0%
	<b>Recently lost job</b>	12	8.5%	4	4.1%		7	7.5%	0	0.0%	
	<b>Employed</b>	19	13.4%	19	19.6%		16	17.2%	15	15.0%	
	<b>Retired</b>	11	7.7%	7	7.2%		7	7.5%	9	9.0%	
	<b>Disability pension</b>	47	33.1%	30	30.9%		25	26.9%	32	32.0%	
	<b>Other</b>	13	9.2%	17	17.5%		14	15.1%	14	14.0%	
<b>Previous admissions to GHPU, N %</b>	<b>No</b>	62	35.4%	56	44.4%	0.114	58	46.0%	42	35.9%	0.109
	<b>Yes</b>	113	64.6%	70	55.6%		68	54.0%	75	64.1%	

Table 2. Percentage distribution of psychiatric consultations over the total number of HED psychiatric consultations by diagnosis, period and year.

	Lockdown period*		Post-lockdown period§	
	2019	2020	2019	2020
	N (%)	N (%)	N (%)	N (%)
<b>Schizophrenia</b>	241 (12.5%)	143 (11.8%)	155 (12.4%)	136 (13.2%)
<b>Anxiety, mood and adjustment disorders</b>	760 (39.4%)	409 (33.9%)	468 (37.3%)	342 (33.2%)
<b>Substance use disorders</b>	133 (6.9%)	111 (9.2%)	113 (9.0%)	88 (8.5%)
<b>Other disorders</b>	797 (41.2%)	544 (45.1%)	518 (41.3%)	464 (45.0%)
<b>Overall number of psychiatric consultations</b>	1931 (100%)	1207 (100%)	1254 (100%)	1030 (%)

\* chi-square=13.8, p=0.003. Significant post-hoc comparisons at p<0.05 between the lockdown period in 2020 and the equivalent period in 2019 were found for the percentage of consultations for anxiety/mood/adjustment disorders, substance use and other disorders . No significant difference was found for schizophrenia.

§ chi-square=4.99, p=0.172

Table 3. Characteristics of psychiatric consultations by period and year

	Lockdown period					Post-lockdown period				
	2019		2020		p-value	2019		2020		p-value
	N.	%	N.	%		N.	%	N.	%	
<b>Admitted to GHPU</b>	148	38.6%	46	32.2%	0.206	106	68.4%	105	77.2%	0.093
<b>Compulsory admission</b>	42	17.4%	24	16.9%	0.895	17	11.0%	21	15.4%	0.258
<b>Positive to drugs of abuse o urine analysis</b>	16	6.6%	14	9.8%	0.266	11	7.1%	14	10.3%	0.332
<b>Suicidality</b>	0.427					0.036 <sup>^</sup>				
Absent/non- detectable	212	95.1%	139	97.2%		125	94.7%	112	91.1%	
Ideation or plans	9	4.0%	4	2.8%		4	3.0%	11	8.9%	
Suicide attempt	2	0.9%	0	0.0%		3	2.3%	0	0.0%	
<b>Pharmacological treatment</b>										
Neuroleptics	48	19.9%	33	23.1%	0.463	27	17.4%	34	25.0%	0.113
Lithium/mood stabilizers	6	2.5%	6	4.2%	0.353	10	6.5%	8	5.9%	0.841
Antidepressants	3	1.2%	2	1.4%	0.898	3	1.9%	8	5.9%	0.078
Benzodiazepines	52	21.6%	46	32.2%	0.021	19	12.3%	45	33.1%	<0.001
Ketamine/propofol/ midazolam	18	7.5%	5	3.5%	0.113	19	12.3%	6	4.4%	0.017

<sup>^</sup>The p-value refers to the overall chi-square test for the 2X3 table for suicidality in the post-lockdown period. A significant post-hoc comparison at p<0.05 were found, indicating an increase in ideation or plans.

## Figure legend

Figure 1. Trend of HED consultations during the study period in 2019 and 2020. PC=weekly percentage change. \*significant change. In 2019, no significant change in slope was observed, while in 2020 one change in slope was observed at week 18 (starting from April 29<sup>th</sup>), when consultations increased at a slower pace compared to the previous period.

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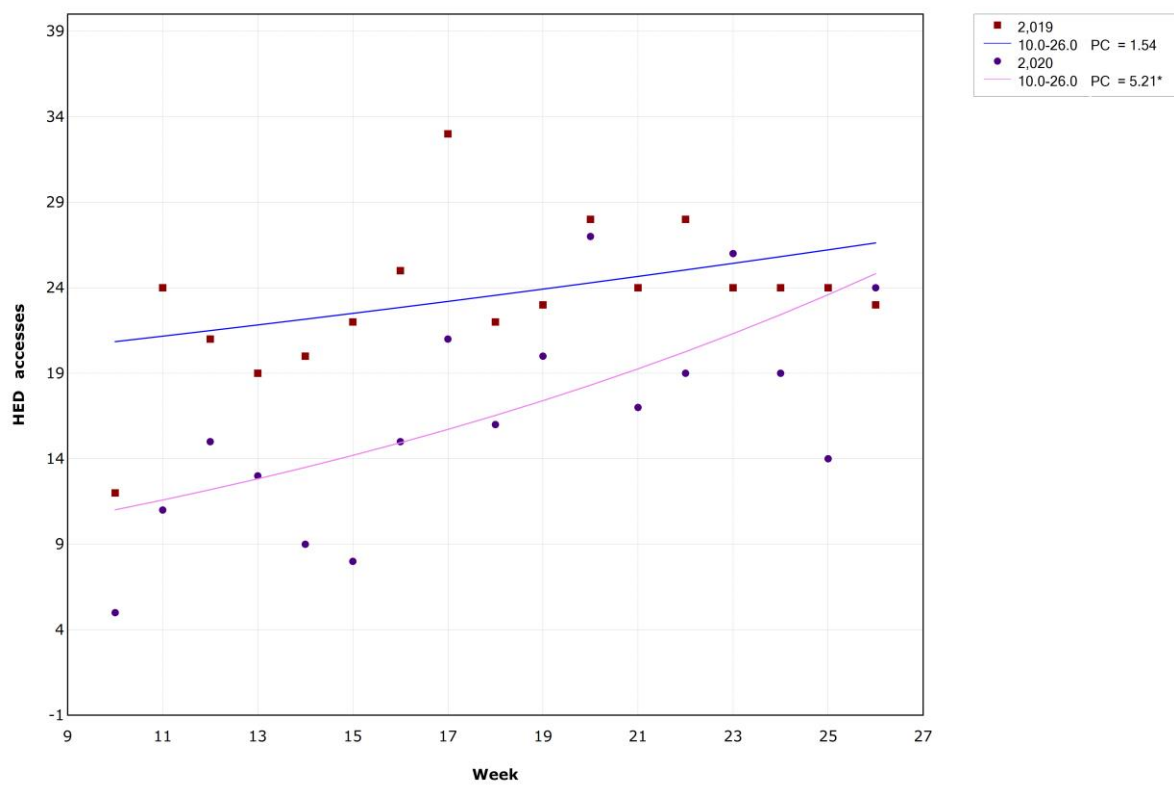
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Figure 1



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