THE IMPACT OF COVID-19 PANDEMIC ON MENTAL HEALTH SERVICES: A COMPARISON BETWEEN FIRST PSYCHIATRIC CONSULTATIONS BEFORE AND AFTER THE PANDEMIC

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Abstract

Objective: A high rate of onset or exacerbation of several mental disorders has been observed during the COVID-19 pandemic. However, the risk contributing to mental distress during the pandemic remains unclear. The study aims to evaluate the risk of the onset of mental disorders by comparing the number of requests for the first psychiatric consultation before and after the COVID-19 pandemic at the psychiatric outpatient services of Varese, a small town in Northern Italy.

Method: This observational retrospective study aims to compare the requests for the first psychiatric consultation at the outpatient services of Varese during the 14-month period before COVID-19 pandemic (from 1st January 2019 to 28th February 2020) versus the 14-month period after the pandemic (from 1st March 2020 to 31st May 2021) extracted from the server SIPRL-Psicheweb database (Sistema Informativo della Psichiatria, Lombardy Region). For each patient, socio-demographic features and clinical data (psychiatric diagnosis, psychiatric comorbidities, previous psychiatric records, and previous hospitalization in the psychiatric ward) were collected.

Results: Three hundred ninety-five consultations were made during the pre-COVID period and 346 during the post-COVID period. No statistically significant difference was found between the number of first consultation requests in the two periods evaluated but a slight decrease in the total number during the pandemic period (395 vs 346; p=0.07) can be noticed. In the subjects of the pre-COVID group, a statistically significant association was detected with no previous psychiatric records ("absent") and with stressor-related disorders. In the post-COVID group, a statistically significant correlation between "present" previous records and anxiety-depressive disorders emerged.

Conclusions: It has been observed that anxiety-depressive disorders increased in the post-COVID-19 period compared to the pre-COVID-19, instead of stressor-related disorders. This might be because stressor-related disorders may be treated by general practitioners with no psychiatric interventions. Most of the first consultations during the period of the COVID-19 pandemic were for patients who already had contact with psychiatric services.

The study shows an increasing request for care by more severe patients in the first phase of the SARS-CoV-2 pandemic. Further research is needed to investigate the long-term impact of the COVID-19 pandemic on emergency departments and hospital services.

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Introduction

Since the beginning of the SARS-COV-2 pandemic, the World Health Organization warned that the COVID-19 pandemic would have burdened mentally-ill patients suffering from mental disorders (WHO, 2022), with the early literature showing a higher risk to exacerbate or aggravate the existing psychiatric disorders (Yao et al., 2020). Moreover, some mental disorders seem to expose (Horesh & Brown, 2020) patients to higher infective risks (Choi et al., 2019; Jiang et al., 2019). In particular, it would seem that substance misuse correlates with a higher vulnerability to SARS-CoV-2 infection (Dubey et al., 2020). Likewise, the pathophysiology of Sars-Cov-2 seems to affect brain-determining neurological problems in cognition (Aghagoli et al., 2021). COVID-19 infection also predisposes to the onset of psychiatric symptoms including post-traumatic stress disorder, anxiety, and depression (Caselli et al., 2022; Vindegaard & Benros, 2020), and exacerbating previous psychiatric disorders. The exacerbation of psychiatric symptoms seems caused by multiple factors including the social and financial context, and the avoidance of the mental health services by the patients in order to reduce the infection risk (Hossain et al., 2020). Moreover, some drugs used to treat COVID-19 patients may interact with psychopharmacologic therapies (Ostuzzi et al., 2020), worsening the problem of drug-drug interactions (Callegari et al., 2016) and poor adherence of psychiatric patients (Ielmini et al., 2018). Preliminary studies have estimated a worsening of the preexisting anxiety and depressive disorders (Gobbi et al., 2020), although data dealing with psychiatric disorder onset and with their trend in the long-term period lacks. Both community and hospital services kept on working, with limitations for local activities. General psychiatry outpatient services have been restricted to urgent visits and to long-acting injectables administration, for second- and third-level outpatients units phone calls and video conferences-based visits have been provided (D'Agostino et al., 2020). The COVID-19 pandemic has been one of the most important health emergencies in recent years and had a major impact on the population's mental health (Xiong et al., 2020). The groups most susceptible to the development of mental disorders seem to be young adults, women, patients suffering from psychiatric disorders, and healthcare workers (Yao et al., 2020; Almeida et al., 2020; De Girolamo et al., 2020). According to the recent literature, the onset or exacerbation of mental disorders could be derived from multiple factors such as stress resulting from the implementation of restrictive measures imposed by the Governments to limit contagions, and the ability of the virus to compromise the Central Nervous System causing the onset of neuropsychiatric symptoms (Aghagoli et al., 2021). Mental health services underwent reorganization while remaining active throughout the duration of the pandemic. Although there are several studies on this issue, the risk of mental distress during the pandemic remains unclear. Thus, the study aims to compare the number of requests for first consultation at the psychiatric outpatient service before and after the COVID-19 pandemic; secondarily, it aims to assess the socio-demographic and clinical characteristics of the patients in the two different periods.

Materials and methods

This observational retrospective study aims to compare the requests for the first psychiatric consultation at the outpatient services during the 14-month period before the COVID-19 pandemic (from 1st January 2019 to 28th February 2020) *versus* the 14-month period after the pandemic (from 1st March 2020 to 31st May 2021). The study provided the collection of data relating to patients referring to the university psychiatric outpatient clinics of Varese, Azzate, and Arcisate (*ASST*, Azienda Socio-Sanitaria TerritorialeSetteLaghi, Varese, Italy) extracted from the server SIPRL-Psicheweb database (Sistema Informativo dellaPsichiatria, Lombardy Region) between November 2021 and August 2022. Patients inclusion criteria are: age $\geq$ 18 years old; turn to one of the outpatient psychiatric services of Varese during the period of evaluation; sign an informed consent for the use of data in an anonymous form for scientific purposes. For each patient, the following characteristics have been considered: socio-demographic characteristics (age, sex, occupation, education, marital status, social status); psychiatric diagnosis; psychiatric comorbidities; therapeutic path (among the three possible: "consultation", "taking in charge" and "taking in care") (www.salute.gov.it, s.d.); previous psychiatric records and previous hospitalization in the psychiatric ward. All confidential registered in the dataset were previously de-identified according to the Italian legislation (DL 196/2003, art. 110, 24th July 2008, art. 13). Ethics committee (Ethics Committee of Insubria, Azienda Socio-Sanitaria TerritorialeSetteLaghi, Varese, Italy) approval was waived because data were made anonymous and unidentifiable, thus the Provincial Health Ethical Review Board, consulted priorly, given the retrospective and observational nature of the investigation, no approval process from the Ethical Board was needed. The study was carried out in accordance with the Declaration of Helsinki (with amendments) and Good Clinical Practice. Socio-demographic characteristics and categorial variables were compared through the Chi-square test; for qualitative variables, Mann Whitney's U test was used. The same tests were used to evaluate the differences in non-parametric quantitative variables. When necessary ($> 20\%$ of values ≤ 5 or values < 1), V Cramer test was used. Binary logistic regression was used to determine the influence of independent variables on the dependent ones, while Shapiro Wilk test was used to evaluate the normal distribution of a quantitative variable. Statistical significance was defined considering a p-value$\leq$0.05, two-tailed. Statistical analyses were performed through Statistical Package for Social Sciences software (IBM SPSS Statistics for Windows, version 24.0; IBM Corp., Armonk, New York, USA).

Results

Data referring to 741 patients (corresponding to 741 requests for first psychiatric consultation) were included. Three hundred ninety-five consultations were made during the pre-COVID period including 177 consultations at Azzate outpatient clinic (44.8%), 64 consultations at Arcisate outpatient clinic (16.2 %), and 154 consultations at Varese outpatient clinic (39%).

Three hundred forty-six consultations were made during the post-COVID period including 136 consultations at Azzate outpatient clinic (39.3%), 52 consultations at the Arcisate outpatient clinic (15%), and 158 consultations at Varese outpatient clinic (45.7%). No statistically significant difference was found between the number of first consultation requests in the two periods evaluated but a slight decrease in

Figure 1. *Distribution of the number of consultations divided by months*
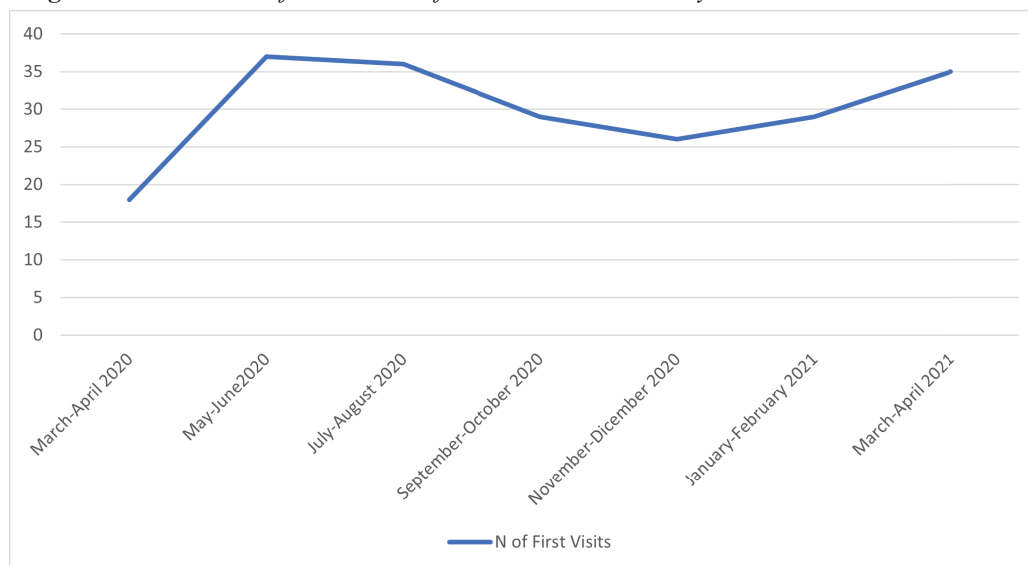
the total number during the pandemic period (395 vs 346; p=0.07) can be noticed. Specifically, there was a low number of psychiatric consultations in the first two months of the post-COVID recruitment phase, i.e. in the March-April 2020 period (**figure 1**).

The socio-demographic characteristics of the two groups of patients are shown in **table 1**. The clinical characteristics of the sample are shown in **table 2**.

Table 1. *Socio-demographic characteristics of the two groups of patients*

		Pre COVID	Post COVID	P value
Sex	Men	175 (44.3%)	157 (45.4%)	0.1
N (%)	Women	220 (55.7%)	189 (54.6%)	0.3
Age Range	< 25 yrs	22 (5.6%)	26 (7.5%)	0.5
N (%)	26-35 yrs	36 (9.1%)	36 (10.4%)	1
	36-45 yrs	66 (16.7%)	53 (15.3%)	0.2
	46-55 yrs	97 (24.6%)	88 (25.4%)	0.5
	56-65 yrs	82 (20.8%)	54 (15.6%)	0.01
	> 65 yrs	92 (23.3%)	89 (25.7%)	0.8
Education	Primary school/no qualification	56 (14.2 %)	57 (16.5%)	0.9
N (%)	Secondary school	195 (49.4%)	154 (44.5%)	0.02
	High school	115 (29.1 %)	110 (31.8%)	0.7
	University	29 (7.3 %)	25 (7.2%)	0.5
Social status	Family of origin	105 (26.6%)	91 (26.3%)	0.3
N (%)	Own family	220 (55.7%)	200 (57.8%)	0.3
	Alone	65 (16.5%)	50 (14.5%)	0.1
	Non residential community	4 (1%)	5 (1.4%)	0.7
	Residential community	1 (0.3%)	0	-
Marital status	Single	142 (35.9%)	124 (35.8%)	0.2
	Married	168 (42.5%)	153 (57.8%)	0.4
N (%)	Divorced	57 (14.4%)	53 (14.5%)	0.7
	Widow	28 (7.1%)	16 (1.4%)	0.07
Occupation	Uneployed	75 (19%)	62 (17.9%)	0.2
	Housewife	24 (6.1 %)	16 (4.4%)	0.2
N (%)	Retired	66 (16.7%)	58 (16.8%)	0.4
	Student	24 (6.1%)	26 (7.5%)	0.7
	Worker/other	124 (31.4%)	103 (29.8%)	0.1
	Teacher/office worker	50 (12.7%)	49 (14.2%)	0.9
	Businessman/executive	5 (1.3%)	0	-
	Invalid/unable	11 (2.8%)	10 (2.9%)	0.8
	Other	16 (4.1%)	22 (6.4 %)	0.3

Legend: N=number

Table 2. *Clinical characteristics of the two groups of patients*

		Pre COVID-19	Post COVID-19	p-value
Previous access	No	209 (52.9%)	127 (7.5%)	0.001
N (%)	Yes	180 (45.6%)	193 (36.7%)	0.01
	Unknown	6 (1.5 %)	26 (55.8%)	
Diagnosis	Neurocognitive disorders	8 (2%)	3 (0.9%)	0.1
N (%)	Substance-related disorders	10 (2.5%)	9 (2.6%)	0.8
	Psychoticdisorders	29 (7.3%)	32 (9.4 %)	0.7
	Anxiety and depressive disorders	159 (40.3%)	177 (51.2%)	0.003
	Bipolardisorders	13 (3.3 %)	8 (2.3 %)	0.2
	Stressor-related disorders	111 (28.1 %)	49 (14.2 %)	0.001
	Personalitydisorders	30 (7.6%)	38 (11%)	0.3
	Othermentaldisorders	19 (4.8%)	20 (5.8%)	0.8
	No psychiatricdiagnosis	16 (4. 1%)	10(2.6%)	0.1
Comorbidites	Substance-related disorders	4 (50%)	2 (11.8%)	0.4
N (%)	Psychotic disorders	1 (12.5%)	0	
	Anxiety and depressive disorders	2 (25%)	6 (35.3%)	0.1
	Stressor-related disorders	0	1 (11.8%)	-
	Personality disorders	1 (12.5%)	6 (35.3%)	0.05
	Others	0	2 (11.8%)	
Therapeutic path	Consultation	281 (71.1 %)	218 (63.7%)	0.00
N (%)	Taking care	109 (27.6%)	117 (34.2%)	0.5
	Taking charge	5 (1.3%)	7 (2%)	0.5

Legend: N=number

Considering the psychiatric history of the total sample, 373 out of 741 patients (50.34%) had previous contacts with outpatient service, 336 out of 741 (45.34%) no previous contacts while we had no specific information for 32 out of 741 (4.32%) (**table 2**).

Considering the whole sample, we found a statistically significant association between previous contacts and first psychiatric consultations requested (Chi-squared = 29.855, p-value < 0.001), i.e. the recruited subjects had already in most cases performed a psychiatric evaluation at outpatient services in the past. This correlation is even more evident by examining the subjects recruited in the post-Covid period (p-value = 0.01). On the other hand, a strong association between no previous psychiatric records ("absent") and the pre-COVID group can be observed (p-value < 0.001) (**table 2**).

Anxiety/depressive disorders were the most common diagnosis in both populations with 177 patients in the post-COVID and 159 in the pre-COVID (**table 3**); various clinical pictures have been included in this macro-category, such as depressive episodes, depressive disorders, mixed anxiety/ depressive disorders, panic attack disorder (DAP), generalized anxiety disorder (GAD), obsessive-compulsive disorder (OCD) and other disorders (**table 4**).

A strong association between stressor-related disorders and the pre-COVID-19 group (p-value < 0.001) and anxiety and depressive disorders and the post-COVID-19 group (p-value = 0.003) can be noticed.

Furthermore, the influence of independent variables (belonging to the pre/post-COVID-19 group) on dichotomic dependent variables (stressor-related disorders and anxiety and depressive disorder) was studied through a binary linear regression model with

a Nagelkerk R square value = 0.06 (6%) that evaluates the model of adaptability. Since the value of Odd Ratio was < 1, we used the formula ((1-OR)* 100); by replacing OR with the value shown in the table of confidence intervals (OR= 0.397) a value of 60% is therefore obtained. This value relates to lower risk (60%) in the post-COVID-19 group, compared to the pre-COVID-19, to develop stress-related disorders. On the other hand, the OR value of 2.522 indicates that belonging to the post-COVID group compared to the pre-COVID group results in a 2.5-fold increase in the probability of developing an anxiety/depressive disorder compared to stressor-related disorders.

Data on subgroups of diagnoses of anxiety and depressive disorders (summarized in **table 4**) shows a strong association between panic disorder and the post-COVID group (21 vs 37; p=0.03). Likewise, personality disorders were more represented in the post-COVID period, with a significant statistical difference (p-value < 0.001) when evaluated as diagnosis and comorbidity. In pre-COVID, n=31 (30 as first diagnosis and 1 as secondary diagnosis); in post-COVID, n=43 (38 as first diagnosis + 5 as comorbidity).

Discussion

International governments applied restrictive emergency measures such as lockdowns, quarantine, and social distancing to face the COVID-19 pandemic. It has been observed that both these measures with the distancing from family (Poloni et al., 2017), associated with fear of the unknown situation, favored the onset and the exacerbation of psychiatric disorders (Ferrucci et al., 2020; Poloni et al., 2018; Zizolfi et al., 2019). From March 2020, the Welfare General Directorate

Table 3. *Distribution of diagnoses subdivided by group*

		Pre COVID-19	Post COVID-19	p-value
Previous access	No	209 (52.9%)	127 (7.5%)	0.001
N (%)	Yes	180 (45.6%)	193 (36.7%)	0.01
	Unknown	6 (1.5 %)	26 (55.8%)	
Diagnosis	Neurocognitive disorders	8 (2%)	3 (0.9%)	0.1
N (%)	Substance-related disorders	10 (2.5%)	9 (2.6%)	0.8
	Psychotic disorders	29 (7.3%)	32 (9.4 %)	0.7
	Anxiety and depressive disorders	159 (40.3%)	177 (51.2%)	0.003
	Bipolar disorders	13 (3.3 %)	8 (2.3 %)	0.2
	Stressor-related disorders	111 (28.1 %)	49 (14.2 %)	0.001
	Personality disorders	30 (7.6%)	38 (11%)	0.3
	Other mental disorders	19 (4.8%)	20 (5.8%)	0.8
	No psychiatric diagnosis	16 (4. 1%)	10(2.6%)	0.1
Comorbidites	Substance-related disorders	4 (50%)	2 (11.8%)	0.4
N (%)	Psychotic disorders	1 (12.5%)	0	
	Anxiety and depressive disorders	2 (25%)	6 (35.3%)	0.1
	Stressor-related disorders	0	1 (11.8%)	-
	Personality disorders	1 (12.5%)	6 (35.3%)	0.05
	Others	0	2 (11.8%)	
Therapeutic path	Consultation	281 (71.1 %)	218 (63.7%)	0.00
N (%)	Taking care	109 (27.6%)	117 (34.2%)	0.5
	Taking charge	5 (1.3%)	7 (2%)	0.5

Legend: N=number

Table 4. *Diagnosis included in the macro-category of anxiety-depressive syndrome*

	Pre-COVID	Post-COVID	p-value
Depressive episodes	26	35	0.4
Depressive disorders	16	18	0.7
Mixed anxiety and depressive disorders	57	53	0.7
PD	21	37	0.03
GAD	21	11	0.07
OCD	11	8	0.4
Others	7	15	0.08
Total	159	177	

Legend. PD = panic disorder; GAD = generalized anxiety disorder; OCD = Obsessive-compulsive disorder.

stopped all the non-urgent outpatient services, maintaining the psychiatric facilities open. Despite the psychiatric services kept on working all the COVID-19 pandemic long, their whole organization was updated (D'Agostino et al., 2020), encouraging telepsychiatry and online consultations. The research focused on consultation activity in psychiatric outpatient clinics in Lombardy since these facilities represent one of the secondary-level care services to whom the citizen presenting psychiatric symptoms are addressed. The study aimed to compare the pre-and post-COVID pandemic period in terms of the number of first psychiatric consultations and in terms of clinical and socio-demographic characteristics of the two samples.

Results show a slight decrement of requests in the post-COVID period (395 vs 346, p=0.07) especially during the first bimester of the pandemic, as shown by **figure 1**, opposite to what was expected due to the usual increment of psychological distress observed during the previous pandemics (Brooks et al., 2020). Two reasons we addressed for this result: services were restricted to emergencies only (D'Agostino et al., 2020; de Girolamo et al., 2020; Percudani et al., 2020), and patients thought it was safer to avoid health services (Czeisler et al., 2020; Lange et al., 2020). This behavior concerned all of the patients, with a huge impact on health quality and overall mortality rates . Socio-demographic characteristics of the two samples did not

differ statistically, except for a lower representation of the 55-65 years old in the post-COVID group (82 vs 54; p=0.001). The homogeneity of the two periods' groups is in contrast with other authors finding that younger adults, females, and adults living alone, showed higher levels of psychiatric symptoms during the pandemic period (Delmastro & Zamariola, 2020; Hossain et al., 2020; World Health Organization, 2022). The study showed an increment of anxiety and depressive disorders in the post-COVID period compared to the pre-COVID period (160 vs 182, p=0.001), according to the literature data (Delmastro & Zamariola, 2020). In particular, panic disorder had a statistically significant increment (21 vs 37, p = 0.035) as shown in other studies (Ettman et al., 2020), as by authors evaluating the long COVID multiorgan syndrome (Kumar et al., 2021; Taquet et al., 2021). The increase in stressor-related disorder was statistically significant, showing a decrease in the post-COVID period (111 vs 49; p=0.01). Binary logistic regression showed that belonging to the post-COVID group leads to a 2.5 higher probability of developing an anxiety/depressive disorder instead of a stressor-related disorder (OR=2.552), differently from what was observed in the literature (Lee et al., 2007) (Wu et al., 2021). This might be because stressor-related disorder may have been treated by general practitioners without specialist interventions, frequently by phone suggestions or virtual sessions. Other diagnoses did not present significant statistically differences between the two populations, differently from what was described by other authors, such as Barlati and colleagues who described an improvement and an exacerbation of patients with severe psychiatric illnesses (Barlati et al., 2020). It is interesting to notice that most of the first consultations during the pandemic period were for patients with previous contact with psychiatric services (180 *vs* 193, p=0.001); this data is aligned with the literature (Di Lorenzo et al., 2021)(Vindegaard & Benros, 2020), suggesting a potential role of vulnerability, as factor associated to stigmatization and poor financial resources of psychiatric patients.

The research presents three main limitations. Firstly, a study based on retrospective findings does not allow the researchers to use the causal inference. Secondly, an evaluation of the symptoms through psycho-diagnostic tools was not applicable since the study was not longitudinal research. Thirdly, the study consists of a single institution research.

Conclusions

This study provides an overview of the first phase of the SARS-CoV-2 pandemic showing an increasing request for care by more severe psychiatric patients due both to the restrictive policies and the fear to get sick, and the need to provide measures to curb this phenomenon. The research is part of a broader study on the differences between the pre-and post-COVID-19 period as regards psychiatric manifestations. Further research is needed to investigate the impact of the COVID-19 pandemic on emergency departments and hospital services in the long-term period. A future perspective would be to carry out a prospective study to evaluate the psychiatric consequences in patients with long COVID-19 syndrome through psycho-diagnostic tests.

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