Reshaping mental health care delivery during the COVID-19 pandemic: service response and telepsychiatry in a catchment area of 10 million people

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Abstract

Background

Detailed information on the effects of the COVID-19 pandemic on large public health systems is lacking. Here we describe the overall functioning of a regional network comprising 58 community mental health centres (CMHCs), which covers a catchment area of approximately 10 million people.

Methods

We employed a registry–based approach to summarize descriptive information on demographic and clinical data retrieved from all CMHCs over a two–year period, grouped according to the provinces of Lombardy in Italy. We then described the progression of all subtypes of remote vs. in-person consultations across provinces after the onset of the pandemic, and calculated remote/face–to–face service delivery ratios according to gender, age and main diagnosis.

Results

Compared to the previous year, the largest drop of outpatient contacts was recorded in provinces that were most affected by the early impact of the viral outbreak, peaking in March and May 2020 (-21.89% and -16.86% respectively). A progressive increase of telepsychiatry interventions was observed diffusely, reaching a peak of almost one every four consultations. Remote/face–to–face ratios were significantly higher in females across all age and diagnostic subgroups, in patients from lower age groups and with diagnoses of Eating and Obsessive–Compulsive disorders.

Conclusions

Our study is the first to describe the impact of the pandemic on a large public mental health system. Future research on service uptake and cost–effectiveness of blended remote delivery should be tailored to service users of different age groups and clinical diagnoses to optimize organization of services.

Introduction

With over 585 million confirmed cases and 6 million deaths worldwide, the ongoing Corona Virus Disease 2019 (COVID-19) pandemic is arguably the most traumatic global event of recent history [1]. Social distancing, isolation, and quarantine were the only effective interventions to slow the spread of transmission, until the widespread distribution of vaccines [2]. Several studies have begun to address widespread concern over the possible consequences of such changes on mental health, including increased rates of depression, anxiety, and trauma-related disturbances in the general population [3, 4]. Patients with mental illness are considered particularly vulnerable in the context of the ongoing pandemic, both as a direct consequence of their psychiatric condition and because of frequent comorbid physical problems, sometimes exacerbated by the side effects of psychotropic drugs [5]. People with mental disorders may therefore be more vulnerable to Covid-19 infection and its complications, as well as to the psychological consequences caused by the constant state of alarm, limitations of interpersonal contacts and changes in daily routines [6].

In this context, mental health care systems were challenged to rapidly reorganize access to services and everyday clinical practice [7, 8]. Infection-control measures were implemented along with measures to promote physical distancing, including reduction of outpatient appointments, restructuring caseloads to minimize contact among patients and using telepsychiatry when possible [9, 10].

Towards the end of February 2020, Italy was the first country to report large clusters of Covid-19 cases outside of China. Initially, these clusters were restricted to Lombardy, the most populous Italian region with a total of approximately 10 million residents. This area presented particularly high case fatality rates in the earlier stages of the pandemic, and infection rates have been estimated around one third of the regional population, with a peak of 72% in the most affected province (Bergamo) [11]. A strict lockdown was enforced by institutions between March 8th and May 3rd 2020, during which public health authorities advised the population to limit their use of hospitals and emergency departments. A block on all but urgent outpatient services was imposed, while full functionality of mental health and substance misuse services was maintained [8].

Available register-based studies have thus far retrospectively analyzed the functioning of hospital mental health services in Lombardy during the national lockdown. Stein et al. found a sharp reduction in emergency department visits for mental health conditions during lockdown compared to the previous 8 weeks and to the same timeframe of the previous year [12]. Clerici et al. observed a marked reduction in voluntary psychiatric admission rates in the 40-day period after the start of the COVID-19 epidemic in Italy, compared to a similar 40-day period prior to February 21st, and to the same period of the previous year. No noticeable reduction was found for compulsory admissions [13]. However, public hospital services in Italy also offer a strongly community-based model of care, based on associated local mental health centres serving patients with mental disturbances from distinct territories. Each centre supplies multidisciplinary outpatient interventions provided by a range of professionals including psychiatrists, psychologists, nurses, social workers, and rehabilitation technicians [14]. Due to a strict overlap between patients' geographical domiciliation and their designated mental health centre, modifications of service use can be closely bound to local epidemiological patterns. During the first wave of the pandemic, these outpatient services underwent substantial transformations, including rapid adoption of telepsychiatry.

In order to map the impact of the pandemic on the mental health system, we aimed to describe (i) the overall functioning of all regional Community Mental Health Centres (CMHCs) and (ii) the entity and characteristics of telepsychiatry delivery in the same services.

Methods

Study design

In June 2021, a customized query was employed to extract deidentified mental healthcare data from the central regional system for all patients accessing mental health services in Lombardy between January, 1st and December 31st in 2019 and 2020. The same 12-month period was selected over 2 years to identify the progression of service delivery during different stages of the COVID- 19 pandemic before and after the first national lockdown on March 8th, 2020, and to allow serial comparisons across equivalent time frames. The period of analysis was extended beyond the end of the first pandemic wave (conventionally end of lockdown on May 3rd, 2020) to focus on both the immediate and the ensuing effects of a fast, system-wide transformation of services.

We used a register-based approach to describe the clinical interventions carried out in 2020 and compare them to those carried out in the previous year. Given the differential progression of the COVID-19 pandemic across different geographical areas, we also described the modifications occurring for each province of Lombardy throughout the twelve months. Finally, we described the characteristics of remote consultations performed in Lombardy and in each of its provinces.

The possibility of recording consultations carried out remotely (by video or phone) was implemented in May 2020, with the possibility of retrospective registration of remote consultations carried out in March and April 2020.

Population

We extracted sociodemographic and clinical data about age, gender and ICD-10 main diagnosis. Diagnoses were grouped as follows: Anxiety disorders, Bipolar and related disorders, Depressive disorders, Feeding and eating disorders, Neurodevelopmental disorders, Obsessive compulsive and related disorders, Personality disorders, Schizophrenia spectrum and other psychotic disorders, Substance related and addictive disorders, Trauma and stressor related disorders, Unspecified mental disorder and Other Diagnosis.

Service organisation and data management

In Italy, mental health services are grounded on a community-based model of care, organised in 139 Department of Mental Health & Addiction Services (DMHAS) serving a defined geographical area [15]. Each DMHAS manages a full range of outpatient and inpatient services. With few exceptions, all costs of mental health care are covered by the National Health Service (NHS) budget. In Lombardy, there are 36 DMHAS covering a catchment area of 9,966,992 people [16]. Residents of defined geographical districts who request any form of consultation are referred to their local DMHAS to receive support. Depending on local population density, each Department governs a variable number of CMHCs distributed across the residential districts, where the vast majority of patient services are delivered. For the purpose of this study, only data from CMHCs were retrieved and the term consultation was adopted to describe any recorded intervention, i.e., first psychiatric visits, psychiatric control visits, administration of medications, team meetings, group and individual psychotherapy, family interviews, social support, nursing support, psychoeducation, daily and social skills training, non-psychiatric referral and job placement. We defined as “ND” the intervention of non-univocal identification (for example due to the lack of the type of operator who performed it). Interventions that by definition cannot be carried out remotely, ie. administration of medication, were discarded in the part of the study concerning the description of the use of telepsychiatry.

Given the diversity of urban and rural territory extensions found in Lombardy, several DMHAS govern CMHC belonging to different provinces. Therefore, all consultation data were regrouped according to the CMHC province. Descriptive statistics were employed to report information on service use. Continuous variables were reported as means and standard deviation, whereas categorical variables were reported as percentages. Pearson's chi-squared tests were performed to identify statistically significant differences between expected and observed frequencies of remote vs face–to–face consultations across gender and diagnostic subgroups.

An open-source cross-platform geographic information system application (QGIS Development Team, 2009. QGIS Geographic Information System. Open Source Geospatial Foundation. URL http://qgis.org) was employed to visually map variables of interest onto raw geographical packages (including shapefiles) of Lombardy provinces retrieved on the regional open source geoportal (https://www.geoportale.regione.lombardia.it/download-dati).

All procedures were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and later amendments. Data handling was compliant with the current legislation on data privacy protection.

Results

Description of the population and service use in Lombardy

Table 1. Sociodemographic characteristic of the population studied (age, gender, ICD-10 main diagnosis).

		2019	2020
	Patients (total number)	124,052	111,780
	Male	55,507 (44.74%)	50,634 (45.30%)
	Female	68,545 (55.26%)	61,146 (54.70%)
Diagnosis	Schizophrenia spect. and other psychotic dis.	22,171 (17.87%)	20,386 (18.24%)
	Anxiety disorders	20,059 (16.17%)	17,856 (15.97%)
	Depressive disorders	17,096 (13.78%)	15,103 (13.51%)
	Personality disorders	14,353 (11.57%)	13,442 (12.03%)
	Trauma and stressor related disorders	11,617 (9.36%)	10,674 (9.55%)
	Bipolar and related disorders	10,628 (8.57%)	9,768 (8.74%)
	Neurodevelopmental disorders	5,253 (4.23%)	4,645 (4.16%)
	Obsessive compulsive and related disorders	2,225 (1.79%)	2,076 (1.86%)
	Feeding and eating disorders	2,026 (1.63%)	1,879 (1.68%)
	Substance related and addictive disorders	1,854 (1.49%)	1,643 (1.47%)
	Unspecified mental disorder*	5,281 (4.26%)	4,494 (4.02%)
	Other diagnosis	4,405 (3.55%)	3,772 (3.37%)
	ND	7,084 (5.71%)	6,042 (5.41%)
Age range	<24	9,017 (7.27%)	8,345 (7.47%)
	25-34	13,148 (10.60%)	11,938 (10.68%)
	35-44	19,815 (15.97%)	16,857 (15.08%)
	45-54	30,871 (24.89%)	27,614 (24.70%)
	55-64	26,415 (21.29%)	24,876 (22.25%)
	65-74	15,715 (12.67%)	14,402 (12.88%)
	>75	9,071 (7.31%)	7,748 (6.93%)
*Provisional diagnosis			

Table 1 shows descriptive statistics of the population studied. Table 2 shows the total number of consultations carried out in public outpatient units of Lombardy during January-December 2019 and 2020.

In 2019, a total of 1,622,615 visits were recorded across 58 CMHCs. The mean age of patients was 50.59 (+/- 16.11) years and 55.26% were women. During 2020, total visits were 1,529,293 (-5.75%), the mean age of patients was 50.62 (+/- 16.08) years and 54.70% were women. In terms of diagnoses, consultations were distributed as follows in 2019 and 2020: 34.78% and 33.75% of the total involved patients diagnosed with schizophrenia spectrum and other psychotic disorders, 15.75% and 16.41% patients with personality disorders, 9.44% and 9.32% patients with anxiety disorders, 9.25% and 9.08% patients with depressive disorders, 9.22% and 9.37% patients with bipolar and related disorders, 4.63% and 4.72% patients with trauma and stressor related disorders, 3.87% and 3.93% patients with neurodevelopmental disorders, 1.63% and 1.69% patients with feeding and eating disorders, 1.60% and 1.56% patients with obsessive compulsive and related disorders and 1.45% and 1.48% patients with alcohol and substance abuse disorders. Consultation types were distributed as follows in 2019 and 2020: 25.31% and 24.44% were psychiatric control visits, 15.64% and 12.84% were daily and social skills training activities, 14.89% and 13.97% were medication administrations, 11.02% and 10.42% individual or group psychotherapies, 9.82% and 12.10% nursing support, 8.55% and 9.14% team meetings, 5.53% and 5.74% interviews with family members, 3.29% and 3.26% social support interventions, 3.09% and 4.97% psychoeducational activities, 1.61% and 1.21% first psychiatric visits, 0.59% and 0.50% job placement interventions and 0.02% and 0.01% non-psychiatric referral.

In the first semester of 2020, the number of outpatient service contacts were consistently lower than the previous year (-10.59%), with the largest drop recorded in March and May (-21.89% and -16.86% respectively). When only first psychiatric visits were considered, a drastic decrease was observed in March, April and May 2020 (-48.99%, -59.08% and -35.25% respectively) with an overall drop in the first semester of 2020 of -26.83%. Psychiatric control visits and individual or group psychotherapy also decreased in the first six months of 2020, albeit generally less compared to first psychiatric visits and with the largest drop in March (-26.64% and -36.71% respectively compared to the previous year).

This decrease is not confirmed in the second semester of 2020, where a substantial recovery in the number of interventions (-0.60%) could be observed. Compared to the previous year, first psychiatric visits decreased by only 8.18% (versus -26.83% in the first semester), psychiatric control visits by 5.32% (-12.38% in the first semester of 2020) and individual or group psychotherapy by 2.57% (-17.92% in the first semester of 2020).

Table 2. Number of consultations carried out in CMHCs of Lombardy during January-December 2019 and 2020, percentage variation between the two years studied and percentage of consultations carried out remotely. Focus on first psychiatric visits, psychiatric control visits and individual or group psychotherapy.

		Total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
All type of consultations	2019	1,622,615	140,236	134,309	143,676	134,971	151,049	132,630	136,532	105,930	135,184	152,650
	2020	1,529,293	133,267	120,617	112,230	127,959	125,587	128,599	135,148	103,947	138,241	143,321
	Variation 19-20 [%]	-5.75%	-4.97%	-10.19%	-21.89%	-5.20%	-16.86%	-3.04%	-1.01%	-1.87%	2.26%	-6.11%
	Remote consult. in 2020 [% on total]	11.70%	0.00%	0.02%	4.13%	7.89%	10.43%	15.57%	14.78%	12.97%	11.71%	14.63%
First psychiatric visits	2019	26,179	2,228	2,182	2,335	2,131	2,431	2,155	2,274	1,741	1,950	2,542
	2020	21,527	2,040	2,157	1,191	872	1,574	2,016	2,137	1,648	2,012	2,295
	Variation 19-20 [%]	-17.77%	-8.44%	-1.15%	-48.99%	-59.08%	-35.25%	-6.45%	-6.02%	-5.34%	3.18%	-9.72%
	Remote consult. in 2020 [% on total]	0.39%	0.00%	0.00%	0.00%	0.57%	0.25%	0.25%	0.19%	0.18%	0.20%	0.44%
Psychiatric control visits	2019	410,679	36,642	34,100	36,647	33,691	39,376	33,176	34,292	25,147	34,903	38,241
	2020	373,743	34,222	30,755	26,886	31,578	31,320	32,425	31,517	23,087	33,465	34,085
	Variation 19-20 [%]	-8.99%	-6.60%	-9.81%	-26.64%	-6.27%	-20.46%	-2.26%	-8.09%	-8.19%	-4.12%	-10.87%
	Remote consult. in 2020 [% on total]	9.90%	0.00%	0.01%	2.70%	6.32%	8.12%	12.15%	11.14%	9.82%	8.74%	12.56%
Individual or group psychotherapy	2019	178,786	15,372	16,103	17,143	14,842	17,881	15,206	13,865	7,500	14,710	18,089
	2020	159,367	14,082	12,861	10,849	14,225	13,641	13,583	14,024	8,014	14,584	15,663
	Variation 19-20 [%]	-10.86%	-8.39%	-20.13%	-36.71%	-4.16%	-23.71%	-10.67%	1.15%	6.85%	-0.86%	-13.41%
	Remote consult. in 2020 [% on total]	18.59%	0.00%	0.04%	9.36%	16.30%	17.81%	28.78%	23.41%	19.12%	16.28%	18.84%

Table 3 shows the number of consultations carried out in each province of Lombardy during the observed years. In the first six months of 2020, except for Sondrio, all provinces recorded a sharp decline compared to 2019, with the largest drop observed in the provinces of Cremona and Lodi (-25.88% and -24.84% respectively). Major decreases were observed in the province of Lodi in February, March and May (-36.47%, -45.19% and -30.67% respectively), in the province of Cremona in March and May (-43.11% and -34.33% respectively) and in the provinces of Bergamo, Brescia and Lecco in March (-35.21%, -29.52% and -30.93% respectively).

In the second semester of 2020 there was a much smaller drop in the number of outpatient service contacts (the largest drop was observed in the provinces of Lodi in October, -23.09%) and some provinces recorded an increase of overall consultations (Brescia +11.85%, Bergamo +7.44%, Mantova +4.65%, Sondrio +3.91% and Cremona +2.14%).

Table 3. Percentage variation between 2020 and 2019 of the number of consultations carried out in CMHCs of Lombardy grouped by province and percentage of consultations carried out remotely in 2020.

		Total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Bergamo	Variation 19-20 [%]	-0.86%	-6.72%	-12.07%	-35.21%	3.42%	-10.83%	10.60%	7.06%	5.09%	11.52%	1.47%	8.02%
	Remote consult. in 2020 [% on total]	10.53%	0.00%	0.00%	1.10%	5.76%	9.10%	18.52%	17.38%	13.77%	10.37%	10.41%	16.15%
Brescia	Variation 19-20 [%]	-1.50%	-9.72%	-14.14%	-29.52%	-12.41%	-19.72%	2.78%	13.66%	12.75%	19.01%	5.18%	10.34%
	Remote consult. in 2020 [% on total]	16.84%	0.01%	0.00%	2.33%	5.63%	19.46%	25.81%	22.79%	19.49%	19.15%	21.85%	26.65%
Como	Variation 19-20 [%]	-5.74%	-1.61%	0.59%	-17.91%	-3.12%	-18.04%	-5.50%	-3.00%	-1.99%	0.34%	-11.10%	-3.84%
	Remote consult. in 2020 [% on total]	9.89%	0.00%	0.00%	2.71%	5.01%	16.90%	13.75%	8.88%	7.33%	6.56%	11.16%	27.06%
Cremona	Variation 19-20 [%]	-12.78%	-8.28%	-20.79%	-43.11%	-25.80%	-34.33%	-21.01%	-16.99%	-0.81%	-3.10%	18.64%	4.32%
	Remote consult. in 2020 [% on total]	10.69%	0.00%	0.26%	4.31%	8.12%	6.97%	12.77%	16.50%	17.24%	13.70%	14.22%	16.72%
Lecco	Variation 19-20 [%]	-8.74%	0.37%	-8.49%	-30.93%	-6.50%	-15.55%	1.05%	-4.11%	-11.25%	-4.13%	-16.66%	-4.79%
	Remote consult. in 2020 [% on total]	6.75%	0.00%	0.00%	0.36%	0.96%	10.26%	8.82%	7.64%	9.16%	7.46%	10.11%	13.23%
Lodi	Variation 19-20 [%]	-18.46%	2.71%	-36.47%	-45.19%	-18.70%	-30.67%	-17.96%	0.42%	-4.24%	-15.27%	-23.09%	-12.31
	Remote consult. in 2020 [% on total]	5.74%	0.00%	0.00%	0.09%	0.13%	2.69%	6.04%	10.36%	9.53%	6.20%	9.86%	12.13%
Mantova	Variation 19-20 [%]	0.74%	-2.73%	-12.31%	-10.96%	3.17%	-1.98%	6.68%	1.98%	-5.03%	8.33%	0.73%	9.26%
	Remote consult. in 2020 [% on total]	5.59%	0.00%	0.00%	0.30%	0.51%	1.38%	5.72%	7.89%	6.59%	6.32%	6.71%	16.10%
Milan	Variation 19-20 [%]	-7.38%	-2.58%	-6.58%	-16.10%	-4.86%	-17.25%	-8.01%	-2.22%	-8.10%	-3.17%	-10.56%	-2.60%
	Remote consult. in 2020 [% on total]	12.78%	0.00%	0.01%	7.73%	13.01%	12.38%	15.54%	14.97%	12.96%	11.83%	14.86%	26.48%
Monza e Brianza	Variation 19-20 [%]	-4.63%	-17.99%	-6.84%	-14.80%	5.05%	-14.42%	4.69%	-4.60%	-7.07%	4.42%	-6.51%	-0.60%
	Remote consult. in 2020 [% on total]	10.69%	0.00%	0.04%	3.35%	6.93%	3.58%	11.22%	12.71%	10.13%	10.51%	15.32%	29.06%
Pavia	Variation 19-20 [%]	-10.87%	-8.03%	-9.29%	-24.22%	-11.77%	-19.89%	-6.53%	-15.32%	-8.21%	-6.56%	-10.95%	-7.19%
	Remote consult. in 2020	6.55%	0.00%	0.00%	0.25%	3.61%	4.74%	7.80%	7.53%	10.29%	7.08%	8.94%	13.73%

	[% on total]												
Sondrio	Variation 19-20 [%]	3.87%	13.11%	-5.60%	-3.48%	13.71%	-2.35%	8.27%	6.29%	2.75%	7.14%	-2.89%	11.65%
	Remote consult. in 2020 [% on total]	6.36%	0.00%	0.00%	0.00%	0.03%	0.14%	6.36%	7.44%	7.41%	5.18%	10.08%	20.50%
Varese	Variation 19-20 [%]	-9.56%	-4.74%	-19.37%	-16.05%	-4.29%	-15.47%	-5.79%	-12.13%	-4.24%	-4.77%	-16.69%	-7.53%
	Remote consult. in 2020 [% on total]	13.21%	0.00%	0.04%	3.13%	9.87%	1.36%	16.56%	15.27%	11.88%	12.51%	18.67%	35.00%

Figure 1 shows the month-by-month percentage variation in number of consultations performed across provinces in 2020 compared to 2019. Except for the province of Lodi, where a -36.47% drop in the overall number of visits could already be observed in February, the largest decline in the number of consultations was recorded in March (Lodi -45.19%, Cremona -43.11%, Bergamo -35.21% and Lecco -30.93%).

Telepsychiatry in Lombardy

As shown in Figure 2, the use of telepsychiatry progressively increases in all the provinces of Lombardy during 2020. Overall, 11.70% of the total consultations was performed remotely, with the highest percentage recorded in November and December 2020 (24.10% and 21.75% respectively). In these months, many provinces have made about 1 out of 4 visits remotely (Brescia, Como, Milano, Monza e Brianza, Varese). Brescia, Varese and Milano recorded the highest percentage of remote consultations during the overall twelve months of 2020 (16.84%, 13.21% and 12.78% of all consultations respectively).

The vast majority of interventions carried out remotely involved patients diagnosed with schizophrenia spectrum and other psychotic disorders, personality disorders, depressive disorders, anxiety disorders and bipolar and related disorders (22.87%, 17.69%, 11.62%, 11.37% and 10.66% respectively). This reflects the distribution by diagnosis of the total consultations performed in both 2019 and 2020. Consultation types were distributed as follows: 24.04% were psychiatric control visits, 19.24% individual or group psychotherapy, 14.10% nursing support, 11.57% team meetings, 9.73% interview with families, 7.86% psychoeducational activities, 7.03% daily and social skills training activities, 3.43% social support activities, 0.45% job placement activities and 0.06% first psychiatric visits (Figure 3).

The ratio of remote versus face-to-face consultations in 2020 by ICD-10 diagnostic group, age range and gender is reported in the supplementary material. The highest ratio was observed for patients with Feeding and eating disorders (0.19) and patients with Obsessive compulsive and related disorders (0.18). The calculated ratios decreased progressively from the lowest age group (<24 years) to the 55–64 years age group, and progressively increased in the subsequent two age groups (65–74 years, > 75 years) for both genders (Figure S1). A relatively higher ratio was observed for female patients across all age (Figure S1) and diagnostic subgroups (Figure S2). Chi–square tests confirmed statistical significance of this observation at the $p<0.001$ level in all age ranges and all ICD-10 diagnostic subgroups, except for Neurodevelopmental disorders.

Discussion

The main finding of our study is a substantial drop in the number of consultations carried out in 2020 compared to the previous year in Lombardy. The most significant decline was observed in the first four months of the pandemic outbreak, when the national lockdown was enforced. In particular, the province of Lodi in which the first COVID-19 case was recorded in Italy on February 21st, suffered the largest drop in the global number of visits that month, rapidly followed by the other provinces in which the virus spread in March [17]. The two provinces in which the largest drops were observed in the first semester also reported the highest crude mortality rate increase in 2020 compared to the previous 5 years, ie. Cremona + 60.75% and Lodi + 50.31% [16]. These observations are in line with those of numerous international studies, which revealed a decrease in emergency department visits, hospitalizations and outpatient consultations during the first pandemic wave [12, 13, 18, 19, 20, 21, 22]. In Lombardy, the regional health department ordered a block to all outpatient healthcare provision wherever staff was necessary for hospitalized patients, except for urgent outpatient services (eg, chemotherapy, radiotherapy, or dialysis) and all mental health and addiction services. However, the latter re-organized their activity according to available guidelines from professional societies, which recommended rescheduling of face-to-face outpatient activity, video calls and telephone contact to ensure therapeutic continuity [23], suspension of all non emergency / urgency consultations until the end of the national emergency and re-evaluation of scheduled outpatient activities through telephone contact with staff to verify physical and mental health condition of the patient and family [24]. These instructions aimed to reduce face-to-face contacts and patient mobility, but also to compensate the drastic staff curtailment suffered in several highly affected areas due to COVID-19 illness or quarantine.

In the second half of 2020, consultations progressively returned to the figures observed in the previous year, suggesting a rapid shift to pre-pandemic service delivery when the lockdown was lifted. Of note, telepsychiatry continued to steadily increase throughout the region and peaked in November and December, when the CMHCs of several provinces supplied approximately 1 out of 4 consultations remotely. This finding suggests a natural integration of telepsychiatry into everyday clinical practice, which paves the way towards a blended form of service delivery in Lombardy. Indeed, the available evidence suggests this type of consultation can be employed in mental health services with high efficacy, applicability and satisfaction of both patients and providers [25]. Several studies

also recently investigated the satisfaction of both patients and mental health care providers during the pandemic, yielding generally positive results [26, 27]. However, skeptical views and insecurity due to lack of training have also been reported in Italy [28]. The major challenge faced by the Italian mental health system is a low government expenditure on mental health, reflected in fewer human resources than in other high-income countries [29]. Of note, higher rates of mandatory treatments and increased antipsychotic dosing have been observed in the catchment areas of mental health services with higher individual workloads due to understaffing [30]. More research is needed to understand if blending telepsychiatry into ordinary practice will reduce perceived workload and globally increase patient and staff satisfaction. In Italy, telepsychiatry was not routinely used in clinical practice before 2020, mainly due to lack of investment on training and teleconferencing infrastructures. Furthermore, patients do not always have access to adequate technological devices, an issue known as digital divide [9, 31]. Our results suggest that patients with severe mental disorders, such as psychosis, did maintain contact with their treatment teams through remote consultations, and the observed distribution of diagnoses closely resembles ordinary face-to-face clinical practice in the previous year. However, available data suggest some general trends of spontaneous remote delivery tailoring across services. First of all, access to telepsychiatry was relatively more frequent in younger age groups, possibly due to increased familiarity with remote communication styles. Elderly patients were an exception to this trend, likely due to active avoidance of public healthcare services to reduce infection risk. Second, female patients were clearly more likely to receive remote delivery. Although further research is needed to clarify this observation, it is in line with the pre–pandemic finding that females generally tend to engage with digital medicine more than males [32, 33]. Third, some specific subgroups of patients – such as those diagnosed with Eating and Obsessive–compulsive disorders – tend towards a higher frequency of remote consultations compared to patients diagnosed with Schizophrenia or Personality disorders. Further study is needed to understand whether this reflects intrinsic psychopathological characteristics of the different subgroups or a specific, pandemic–related trend. Of note, the groups of patients who received relatively more remote consultations have a substantially lower impact on everyday service delivery compared to the groups with lower remote engagement. This suggests that blended forms of delivery may be more problematic for patients with diagnoses such as Schizophrenia or Personality disorders, who typically yield a relatively higher burden on everyday clinical practice in mental health services. Compared to a similar study from a smaller catchment area of two National Health System mental health Trusts in the United Kingdom [34], remote vs face–to–face ratios observed in Lombardy were substantially lower in 2020. Indeed, the reported range (0.09 – 0.19) overlaps more closely to the pre–pandemic range observed in the UK in 2019 (0.12 – 0.34), suggesting a considerable delay in the digitalization of service delivery in Italy. However, these findings cannot fully be compared due to the different organization of mental health systems, intervention types and treated age groups across countries. Finally, all intervention subtypes were delivered remotely in 2020, with the notable exception of first psychiatric visits. An international comparative study recently showed that telepsychiatry regulation on first visits was globally relaxed during the pandemic, although Italy remained the only one of 17 countries in which telepsychiatry could not be used for a patient's first visit [35].

The context of uncertainty and fear caused by the ongoing pandemic, and the stress caused by quarantine, social distancing and financial insecurity are expected to increase the global burden of mental health issues, as occurred after previous social crises [3, 36, 37]. However, our data failed to capture an increased demand for psychiatric care and several explanatory hypotheses can be made. In the first year of the pandemic, many people avoided contact with healthcare services due to fear of exposure to COVID-19 [38] and perhaps postponed their request for mental health support. Moreover, an observation of only one year may not be sufficient to highlight the long-term psychiatric consequences of the pandemic. Furthermore, despite continuous functionality of mental health services, public health authorities continuously advised the population to limit their contact with healthcare facilities, perhaps contributing to uncertainty in potential patients.

Our study has several limitations. First, the lack of telepsychiatry data for 2019 limits the possibility to ascertain the entity of the observed increase in 2020. Second, no information was available on the device used for remote consultations, so telephone calls could not be separated from e-mail contact or full video-consultations. Third, no information on relevant sociodemographic aspects such as socioeconomic status of individual service users was available. Indeed, we have previously shown that remote service delivery did not reach some groups of patients in the United Kingdom [34]. Fourth, no information was available on clinical outcomes, thereby limiting the possibility of evaluating effectiveness of delivered interventions throughout the observation period.

In conclusion, our study is the first to show the impact of the Covid-19 pandemic on a large public mental health system with a catchment area of approximately 10 million people. Despite regional differences in system organization and resources [30], our findings on current service provision and characteristics of telepsychiatry implementation may be used to develop novel healthcare policies on a national level, and effectively compared to similar international contexts. The rapid reorganization that was triggered by an abrupt and intense pandemic wave, now offers policymakers and other relevant stakeholders the opportunity to shape future mental health services. In our view, adequate resources should be allocated to staff training and teleconferencing systems in healthcare facilities on one hand, and to research on service uptake and cost–effectiveness of blended remote delivery in specific patient populations on the other.

Declarations

• Financial Support: This research received no specific grant from any funding agency, commercial or not-for-profit sectors.

• Conflicts of Interest: The authors declare none.

• Data Availability: Data are available from the authors with the permission of Struttura Salute Mentale, Dipendenze, Disabilità e Sanità Penitenziaria, Regione Lombardia, Italy

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Figures

Figure 1

Modification of all consultations delivered in CMHCs of Lombardy grouped by province and expressed as percentage variation between 2020 and 2019. Darker shades reflect larger decreases of service delivery across the 12 months of observation. BG=Bergamo, BS=Brescia, CO=Como, CR=Cremona, LC=Lecco, LO=Lodi, MN=Mantova, MI=Milano, MB=Monza E Brianza, PV=Pavia, SO=Sondrio, VA=Varese.

Figure 2

Progression from January to December 2020 of the use of telepsychiatry in CMHCs of Lombardy grouped by province and expressed as percentage of total consultations (remotely + face-to-face). Darker shades reflect greater use of telepsychiatry.

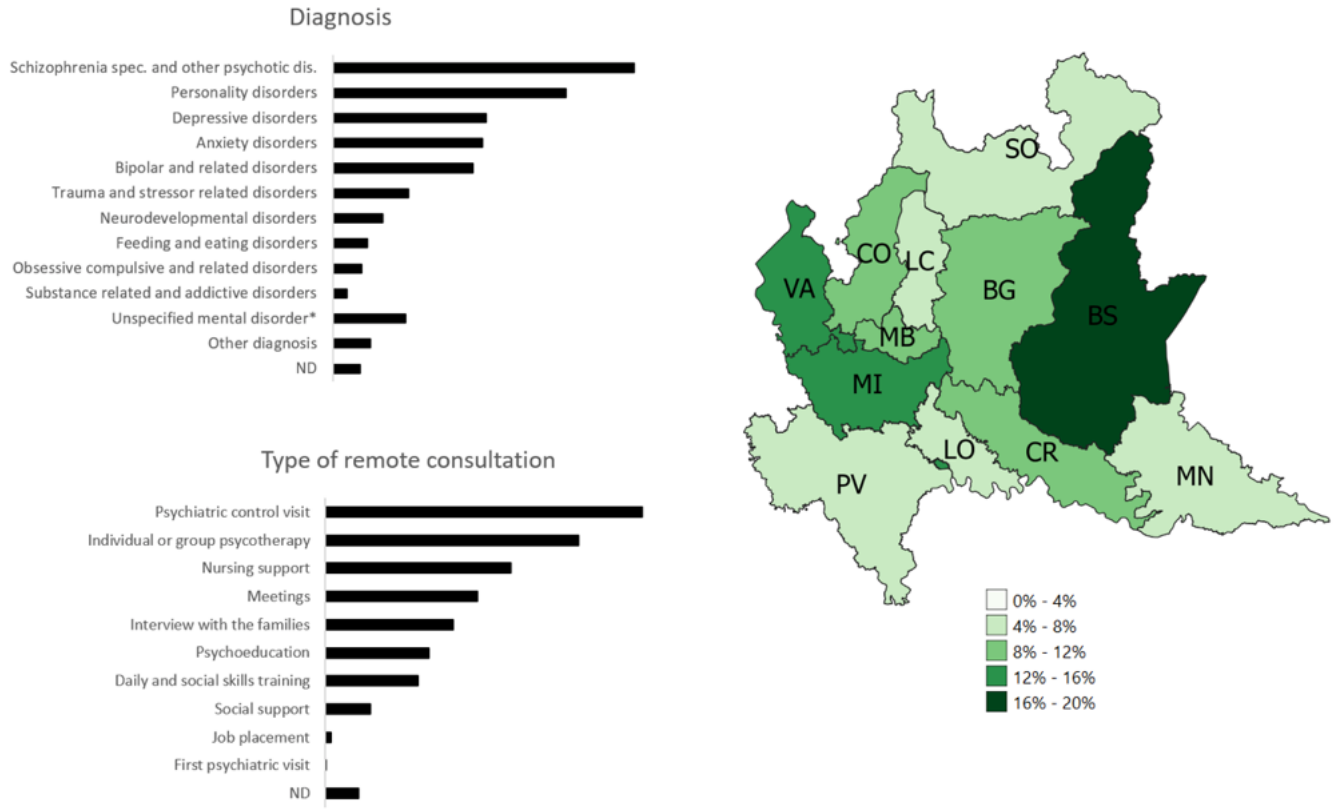

Figure 3

Heatmap of Lombardy with each province colored according to the percentage of consultation performed remotely during 2020. It is also possible to observe a partition of remote consultations by diagnosis and by type of consultation. *Provisional diagnosis

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