



Mid-term psychiatric consequences of the COVID-19 pandemic: a 4 months observational study on emergency room admissions for psychiatric evaluation after the (first) lockdown period in Italy

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Abstract

Purpose The aim of our study is to evaluate the number and the features of admissions to the emergency room (ER) requiring psychiatric consultation, in the period between May 4th and August 31st 2020.

Methods We carried out a retrospective longitudinal observational study examining the 4 months following the initial lockdown imposed during the COVID-19 outbreak (May 4th and August 31st 2020). More specifically, the ER admissions leading to psychiatric referral were reviewed at all seven public hospitals of AUSL Romagna (Emilia Romagna region, Italy). Socio-demographic variables, history of medical comorbidities or psychiatric disorders, reason for ER admission, psychiatric diagnosis at discharge, and actions taken by the psychiatrist were collected.

Results An 11.3% ($p = 0.007$) increase in psychiatric assessments was observed when compared with the same period of the previous year (2019). A positive personal history of psychiatric disorders (OR: 0.68, CI: 0.53–0.87) and assessments leading to no indication for follow-up (OR: 0.22, CI: 0.13–0.39) were significantly less frequent, while there was a significant increase of cases featuring organic comorbidities (OR: 1.24, CI: 1.00–1.52) and suicidal ideation/self-harm/suicide attempt (OR: 1.71, CI: 1.19–2.45) or psychomotor agitation (OR: 1.46, CI: 1.02–2.07) as reason for admission.

Conclusions Our results showed an increase in ER psychiatric consultations compared to the previous year, underlying the increased psychological distress caused by the lockdown.

Keywords Pandemic · Follow-up · COVID-19 · Mental health · Psychiatric consultation

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Introduction

In response to the severe growing pandemic of COVID-19, the Italian Government imposed a national lockdown between March 9th and May 3rd 2020. Measures restricted the movement of the public, except for specific circumstances pertaining to work and health involved the temporary closure of non-essential services and industries, and a transition to “smart-working” and online classes when possible. In the summer of 2020, allowing for partial return to the workplace and resumption of social activities. Shops and restaurants reopened, though gyms and theaters remained closed and sports in enclosed places remained forbidden; whenever possible, employees kept working from home.

The WHO declared the novel COVID-19 disease a pandemic, with severe consequences for health and global economic activity. Italy was one of the hardest hit countries [1]: total disability-adjusted life years (DALYs) amounted to 2.01 per 1000 persons; total permanent productivity loss was around 300 million euros, while the temporary productivity loss was around 100 million euros [1]. Nonetheless, evidence from other countries is mixed. A Swiss study demonstrated that the years of life lost (YLL) increased during and after the lockdown [2], underlining the burden of the lockdown and its association with negative consequences, like increase in alcohol use and depression. By contrast, a Scandinavian study evidenced a lower mortality rate during the pandemic in Norway due to a drop in car and work-related accidents, infections, and other risks associated with social life [3]. A systematic review of the literature [4] confirmed that the financial loss caused by the lockdown created serious socioeconomic distress and was found to be the main risk factor for symptoms of psychological distress such as anger and anxiety, which persisted for several months after lockdown [4]. Some authors have argued that the pandemic could also lead to an increase in suicides [5]. Admission to the emergency room (ER) is considered an index of severe psychiatric distress, since it represents a cry for help brought on by the patient's discomfort. Recent reports found a decrease in psychiatric ER visits [6–11] during the lockdown, despite an increase in suicide ideation/behavior [12–15], that is predicted to worsen in the near future [16].

More detailed data on psychiatric distress after the lockdown are still scarce, with little agreement on their proper interpretation. Gijzen and coll. [17] explored the psychological effects following the relaxation of government-imposed measures in The Netherlands: most participants reported no change in mental health or even a positive effect. A large French survey [18] investigating the number of hospitalizations for self-harm between January

and August 2020 found an 8.5% decrease compared to the same period of the previous year. By contrast, many surveys have found that the pandemic has had a negative impact on the mental health of the population [19, 20]. O'Connor and colleagues [21] revealed that women, young adults, those from more socially disadvantaged backgrounds, and those with pre-existing mental health conditions have experienced worse mental health outcomes during the pandemic. As far as the intensity of ER admissions related to psychiatric crises or emergencies are concerned, the current literature is controversial. Data from the United Kingdom [22] show an acceleration in long-term urgent and emergency mental health referrals after an initial instantaneous drop at the beginning of the lockdown, while a recent multicentric Italian study found a reduction trend (11.2%) compared with the same period of the previous year in the 2 months following the lockdown period [12], even if in the lockdown this reduction this was more significant.

The aim of our study was to compare the number of ER admissions in the territory of northeastern Italy administered by the AUSL Romagna requiring the psychiatric evaluation of adult patients in the 4 months following “phase one” of restrictions during the initial COVID-19 outbreak (from May 4th, 2020 to August 31th, 2020) with those of the same period of the year 2019. Additionally, we aimed to investigate the socio-demographic and clinical characteristics of patients admitted.

Methods

This is a retrospective longitudinal observational study of ER admissions resulting in psychiatric assessment at the hospitals of Ravenna, Faenza, Lugo, Rimini, Riccione, Cesena, and Forlì. The catchment area included 951,080 adult inhabitants, distributed between four districts: Cesena, 176,232; Ravenna, 331,151; Forlì, 156,884; Rimini, 286,813.

Measures

Electronic databases were searched for the following data: socio-demographic variables (age, gender, ethnicity, marital status, and housing status), co-morbid medical disorders or history of psychiatric disorders, previous or current psychiatric care, reason for ER admission, psychiatric diagnosis based on the psychopathological assessment performed by the consulting psychiatrist, and measures suggested by the caring psychiatrist (hospitalization in psychiatric ward, other).

The study was approved by the local ethics committee on March 19th, 2021. A consent form was not required, since all data were collected anonymously to allow statistical

elaboration and were managed in aggregate form to avoid patient identification.

Statistical analysis

All relevant variables were included in a general database and analyzed using SPSS 16.0 software. Basic descriptive statistics were performed, with continuous variables presented as absolute numbers (*N*), mean, and standard deviation (SD) and categorical variables as frequencies and percentages.

The sample was divided into two groups: variables related to the post-lockdown period (May 4th, 2020 and August 31th, 2020) and variables related to the control period (May 4th, 2019 and August 31th, 2019). A Poisson distribution was applied to the total number of visits/patients. The total number of visits/patients was compared using a *z* test (normal approximation for the Poisson distribution).

Chi-square was used to test the association between each variable and period. All variables found to be statistically significant in univariate analyses and with a missing rate < 20% were included in a multivariable binary logistic regression model. Results are reported as odds ratios (OR) with a 95% confidence intervals (95% CI). The significance level was set at 5%.

Results

In the period examined, we found a significant increase of 11.3% ($p=0.007$) in psychiatric assessments (1220 in 2019 and 1358 in 2020).

Comparison between post-quarantine period and corresponding antecedent period

Tables 1 and 2 compare the variables referring to the two time periods, outlining some statistically significant changes.

Among the demographic variables (Table 1), the two groups differed significantly only in terms of their working status, which in 2020 saw an increase in retirees and a relative decrease in employees. Absence of psychiatric morbidity and the presence of chronic medical co-morbid conditions were correlated with a significant increase in psychiatric consultation (Table 2).

Finally, the 2 years differed significantly in terms of reason for psychiatric referral, psychiatric diagnosis, and indication for back referral (outcome of the consultation). In 2020, agitation, psychotic symptoms, and suicidal ideation/self-harm/suicide attempt were the prominent reasons for psychiatric referral. The same period was accompanied by a decrease in diagnoses of alcohol/substance abuse and an increase in diagnoses of psychosis. In terms of

Table 1 Comparison between demographic variables in admissions to the ER with psychiatric consultation in the corresponding periods of 2020 and 2019

| | 2019 | % | 2020 | % | <i>p</i> |
|-----------------------|------|------|------|------|----------|
| Age | | | | | 0.12 |
| < 18 | 29 | 2.5 | 43 | 3.2 | |
| 18–30 | 303 | 26.4 | 316 | 23.6 | |
| 31–45 | 269 | 23.4 | 319 | 23.8 | |
| 46–64 | 373 | 32.5 | 415 | 30.9 | |
| 65–80 | 129 | 11.2 | 171 | 12.8 | |
| 81+ | 45 | 3.9 | 77 | 5.7 | |
| Gender | | | | | 0.71 |
| Male | 562 | 49.0 | 667 | 49.7 | |
| Female | 585 | 51.0 | 674 | 50.3 | |
| Marital status | | | | | 0.26 |
| Single | 577 | 58.8 | 658 | 55.6 | |
| Married | 258 | 26.3 | 314 | 26.5 | |
| Separated/divorced | 98 | 10.0 | 136 | 11.5 | |
| Widowed | 49 | 5.0 | 76 | 6.4 | |
| Ethnicity | | | | | 0.20 |
| Italian | 923 | 80.5 | 1107 | 82.6 | |
| Foreign | 223 | 19.5 | 234 | 17.4 | |
| Working status | | | | | 0.02 |
| Employed | 248 | 28.5 | 261 | 24.5 | |
| Unemployed | 322 | 37.1 | 369 | 34.7 | |
| Retired | 144 | 16.6 | 232 | 21.8 | |
| Economically inactive | 155 | 17.8 | 200 | 18.8 | |
| Housing status | | | | | 0.42 |
| Alone | 177 | 17.0 | 205 | 17.1 | |
| Family of origin | 333 | 32.1 | 413 | 34.5 | |
| Acquired family | 314 | 30.2 | 359 | 30.0 | |
| Residential facility | 150 | 14.4 | 161 | 13.4 | |
| Homeless | 35 | 3.4 | 24 | 2.0 | |
| Other | 28 | 2.7 | 35 | 2.9 | |

back-referrals, fewer cases resulted in no indication for follow-up or referral to the community mental health center; however, referrals to outpatient clinics increased if also considering indications for adjustment of psychotropic medication.

In the multivariate logistic regression model (working status was excluded due to missing data, > 20%), only history of psychiatric disorders (OR: 0.68, CI: 0.53–0.87), diagnosis, and no follow-up indication (OR: 0.22, CI: 0.13–0.39) decreased significantly in the period considered compared to 2019. There was, however, a significant increase in referrals for patients with a medical comorbidity (OR: 1.24, CI: 1.00–1.52) and those admitted for suicidal ideation/self-harm/suicide attempt (OR: 1.71, CI: 1.19–2.45) or psychomotor agitation (OR: 1.46, CI: 1.02–2.07).

Table 2 Comparison between clinical variables in admissions to the ER with psychiatric consultation in the corresponding periods of 2020 and 2019

| | 2019 | % | 2020 | % | <i>p</i> |
|--|------|------|------|------|----------|
| Medical comorbidity | | | | | 0.04 |
| Yes | 803 | 74.8 | 905 | 70.9 | |
| No | 271 | 25.2 | 371 | 29.1 | |
| Psychiatric history | | | | | 0.01 |
| Yes | 950 | 82.8 | 1058 | 78.8 | |
| No | 197 | 17.2 | 284 | 21.2 | |
| Psychiatric care | | | | | 0.84 |
| No | 267 | 23.4 | 333 | 25.2 | |
| Psychiatric outpatient | 468 | 40.9 | 534 | 40.5 | |
| Substance abuse center | 82 | 7.2 | 100 | 7.6 | |
| Geriatric/pediatric psychiatry | 16 | 1.4 | 22 | 1.7 | |
| Private practice | 100 | 8.7 | 109 | 8.3 | |
| Previous care | 117 | 10.2 | 117 | 8.9 | |
| Psychiatric center + substance abuse center | 16 | 8.1 | 22 | 8.0 | |
| Reason for ER psychiatric referral | | | | | <0.01 |
| Psychomotor agitation | 255 | 23.8 | 341 | 27.3 | |
| Psychotic episode | 87 | 8.1 | 133 | 10.6 | |
| Manic episode | 43 | 4.0 | 55 | 4.4 | |
| Depression episode | 117 | 10.9 | 127 | 10.2 | |
| Anxiety episode | 297 | 27.7 | 244 | 19.5 | |
| Suicidal ideation/self-harm/suicide attempt | 143 | 13.4 | 228 | 19.3 | |
| Intoxication | 85 | 7.9 | 76 | 6.1 | |
| Confusion | 44 | 4.1 | 45 | 3.6 | |
| Psychiatric diagnosis | | | | | 0.01 |
| No diagnosis | 20 | 1.7 | 38 | 2.8 | |
| Psycho-organic | 79 | 6.9 | 98 | 7.3 | |
| Psychotic disorder | 126 | 11.0 | 199 | 14.8 | |
| Mood disorders | 174 | 15.2 | 228 | 17.0 | |
| Anxiety disorders | 78 | 6.8 | 88 | 6.6 | |
| Eating disorders | 5 | 0.4 | 5 | 0.4 | |
| Personality disorders | 106 | 9.2 | 120 | 8.9 | |
| Cognitive disability | 54 | 4.7 | 49 | 3.7 | |
| Alcohol/substance use disorders | 108 | 9.4 | 90 | 6.7 | |
| Adjustment disorders | 160 | 14.0 | 157 | 11.7 | |
| DSM-IV Axis I + personality disorder | 63 | 5.5 | 56 | 4.2 | |
| Dual diagnosis | 173 | 15.1 | 213 | 15.9 | |
| Outcome (back referral) | | | | | <0.01 |
| No indication | 78 | 6.8 | 29 | 2.2 | |
| Psychiatric outpatient clinic | 252 | 22.0 | 197 | 14.7 | |
| Substance center | 67 | 5.9 | 65 | 4.8 | |
| Psychiatric outpatient clinic + substance center | 14 | 1.2 | 26 | 1.9 | |
| Adjustment of psychotropic medication | 137 | 12.0 | 183 | 13.6 | |
| Psychiatric outpatient clinic + change in medication | 257 | 22.4 | 389 | 29.0 | |
| Psychiatric ward admission | 237 | 20.7 | 319 | 23.8 | |
| Other | 103 | 9.0 | 134 | 10.0 | |

Discussion

The aim of the present study was to report on variations in ER admissions, resulting in psychiatric referrals in the

period following the 2020 COVID-19-related lockdown compared to the same period of the previous year, with the intent to outline meaningful changes in terms of reason for admission/referral and outcome of psychiatric assessment.

Our first significant finding was the overall increase in the number of ER admissions resulting in psychiatric referral. This was particularly evident among subjects with a mute psychiatric history. In contrast, a large Italian multicenter study [12] found an 11.2% reduction in ER admissions in the first 2 months of the post-lockdown period (between May 18th and June 30th 2020). This difference could be accounted for by our decision to examine a 4 month rather than 2 month period. We might assume that the initial period after lockdown may have been characterized by an ongoing fear of contagion, since hospitals were still perceived as places with the highest risk of contact [23]. Subsequently, accompanying the relaxation of national restrictions, the psychological discomfort caused by previous social constraints and the subsequent economic burden may have amplified or became more apparent [22]. This discomfort could also account for the significantly higher number of admissions for psychomotor agitation and suicidal ideation/self-harm/suicide attempt, a trend already observed during the lockdown period by numerous studies [6, 10, 13–15], including our previous work, though it did not reach statistical significance [7]. Our results are in line with a Swiss study with a similar methodology [24] and support the hypothesis of long-term impact of the lockdown [4, 16]. Nevertheless, these findings are contrasted by a French survey that documented a reduction in hospitalizations for self-harm in the same period [18].

An increase in psychiatric referrals for people without a history of psychiatric disorders was also observed. Moreover, when considering individual psychiatric diagnoses by way of multivariate analysis, every psychiatric diagnosis at consultation lost its significance, suggesting that the discomfort is not correlated with a pre-existing psychiatric condition or a specific psychiatric diagnosis at consultation. This finding contrasts previous data [19] and leads us to believe that the increase in psychiatric disorders during the pandemic was correlated to anxiety (in particular, PTSD) and depressive disorders [19, 25, 26], which in the first wave of the pandemic did not lead to increased access to the ER, largely due to fear of contagion, as our previous work also documented [7]. By the summer of 2020, the persistence or even increase of psychological distress along with the attenuation of restrictions and related avoidance behaviors led to a rebound in ER admissions, accounting for the increase in psychiatric referrals. Moreover, not only was there an increase in cases of anxiety or depression, but also of those presenting psychotic symptoms, known to carry the highest mental health burden [27]. It has been noted that fragmentation symptoms that found their place in the ‘outside world’ during the lockdown subsequently came back into the inside world, resulting in discomfort, and a consequent worsening of psychotic symptoms [28]. Our results are similar to those of other authors [29].

Although most admissions in both years involved unemployed subjects, the main target of psychiatric care [30, 31], a significant increase in retiree presence, and a decrease in the employed were found. This result is not surprising if considering that those employed kept working, from home when necessary, and potentially had their everyday life less affected. For retirees, however, the presence and persistence of restrictions meant a stop to less essential activities, such as hobbies and entertainment, resulting in more significant repercussions on life, with an increase in stress and frustration.

In line with previous data, though not significant, our data showed a trend toward increasing age among those referred to the ER [22]. This finding should not be a surprise: it is known that the consequences of the pandemic are more severe in people aged 65 years and over, both in terms of mortality and severity of symptoms, leading more often to intensive care admission [32]. Feeling more vulnerable seemed to be a very strong triggering component of the psychological suffering in the elderly [33]. Moreover, older individuals have a more fatalistic perception of their life and physical health, suffering from more co-morbid conditions, and requiring follow-up visits and ongoing assistance. This, combined with the loss of social networks and the difficulties of procuring medical assistance because of a health care shift toward COVID-related disorders, created, a situation of higher stress with decreased availability of psycho-social support. The increase of people with co-morbid organic conditions could be justified by the fact that the mortality rate of the pandemic in Italy (7.7%) is the highest in the world [32] and is ten times higher in people with pre-existing health conditions (<https://ourworldindata.org/mortality-risk-covid>), increasing the fear of the pandemic in this specific population.

Finally, the cases in which no specific indication was provided at the end of the psychiatric consultation significantly decreased. This may be a proxy of greater severity of clinical reasons for admissions, which is supported by an increase in admission to the psychiatric ward, though not significant. These data, along with the increase in psychiatric admissions, support the assumption that the pandemic has generated psychological distress, not only in the short term and especially in the non-psychiatric population [4].

Limitations

Our study has several limitations. First, the retrospective design could have led to biases in the collection of some variables. Second, the study was performed in a local setting and, hence, the generalizability of our findings may be limited. Finally, we could not detect non-adherence to lockdown nor could we compare the present period with previous years

to verify whether the observed findings differ from what is expected outside the pandemic time-frame.

Strengths

The main strength of the study is the originality of the topic. While the short-term effects of lockdown have been investigated extensively, data on the mid-term effects are lacking in the current literature.

Conclusions

The present study documents a slight increase in the number of ER admissions to the general hospitals of the Romagna region in the north of Italy, in the period after the lockdown, compared to the previous year. This was particularly evident among people with no previous psychiatric history, with a co-morbid medical condition, and those entering the ER for suicidal ideation/behavior. Further studies in larger populations are needed to confirm data from our sample. Moreover, studies conducted in a longer period could give us the real economic burden of the pandemic and the psychiatric consequences.

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Declarations

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