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Short communication

COVID-19 and psychiatric admissions: An observational study of the first six months of lockdown in Melbourne

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A R T I C L E   I N F O
Keywords:
COVID-19
Lockdown
Inpatient treatment

A B S T R A C T
Research on the effect of a prolonged lockdown on inpatient admissions is limited. In this background, this study was planned, and it included patients admitted to inpatient units of a large mental health network in Melbourne during the lockdown (March 16 – September 16, 2020) and a similar time period in 2019. The results showed a 12% decrease in admissions. The lockdown period included patients with lower mean age and more patients with never married status, higher education status, students and patients with home duties, and certain psychiatric diagnoses. Overall, the patients needing inpatient treatment during a prolonged lockdown are different.

Introduction

The COVID-19 pandemic and lockdown have negative effects on the population and mental health services (Fisher et al., 2020; World Health Organization, 2020). Until now, only a few studies have examined how the pandemic and lockdowns could influence acute psychiatric admissions (Abbas et al., 2020; Clerici et al., 2020; Itrat et al., 2020; Tromans et al., 2020). Many studies found a substantial reduction in hospital admissions during the pandemic and lockdown (Abbas et al., 2020; Clerici et al., 2020; Tromans et al., 2020). A change in diagnostic groups was also reported. Abbas et al. (2020) found an increase in non-affective psychotic disorders and bipolar affective disorders, whereas Clerici et al. (2020) reported a reduction in bipolar affective disorder diagnosis.

Studies have so far used a short timeframe, i.e., 6-8 weeks study period and a similar length of time in the same year or in previous years as control periods, to assess the effect of pandemic or lockdown on inpatient admissions (Abbas et al., 2020; Clerici et al., 2020; Itrat et al., 2020; Tromans et al., 2020). Many countries have implemented extended periods of lockdown as the COVID-19 pandemic is still progressing. The State of Victoria implemented lockdown measures since 16 March 2020 due to successive first and second waves of the COVID-19 pandemic. Hence, we wanted to investigate the effects of the first six months of the lockdown on the number of inpatient admissions and the nature of patients receiving inpatient treatment.

Methods

This observational study, with cross-sectional and retrospective in design, compared the nature of patients who needed inpatient hospital treatment during the first six months of the COVID-19 lockdown in Melbourne, i.e., 16 March -16 September 2020. A similar period in 2019 was the control period (16 March -16 September 2019). This study was based on inpatients units four adult mental health services (beds = 128) of the North Western Mental Health (NWMH) network of Melbourne Health. The NWMH provides psychiatric services to more than 1.2 million residents in the north and west of the metropolitan Melbourne. In NWMH, the inpatient units are expected to have a minimum two discharges per day, which is a key performance index (KPI), to maintain bed availability to meet demands. Following the initiation of lockdown in Melbourne, the community teams within the service have changed
their model of care by reducing direct contact hours, use of tele-psychiatry, reduced home visits and allowing some staff to work from home.

We collected socio-demographic and clinical variables, as in Table 1, from the hospital databases. All diagnoses were based on ICD-10 AM. Data were de-identified and secured to meet privacy and confidentiality requirements. The Melbourne Health Human Research Ethics Committee approved this study. Descriptive statistics and inferential statistics (Chi-Square test and independent t test) with alpha (significance) level ≤ 0.05 were carried out through SPSS Ver. 27.0.

**Results**

Total sample was 3660 (n = 1843, for the control group; n = 1817, for the lockdown group). After exclusion of patients with no clear diagnosis (2019, n = 356; 2020, n = 510), the final sample included 1487 and 1307 patients with a clear psychiatric diagnosis in the control and lockdown periods, respectively (i.e., a 12.1% reduction).

The mean age of the patients admitted during the lockdown was significantly less (37.92 ± 11.90 vs 39.54 ± 11.66, p < 0.001). Compared to the control period, the lockdown period included more patients with never married status (p = 0.03), education status higher than years 7-10 (p = 0.019), and studying or home duties (p = 0.044). On clinical variables, the lockdown period included higher rate of psychotic disorders, mood disorders, and personality disorders (p < 0.001). Groups were not different in other variables (Table 1).

**Table 1** Characteristics of patients

| Variables                    | Control group | Lockdown group | X2/ t | p     |
|------------------------------|---------------|----------------|-------|-------|
| Age (years)                  | 39.54 ± 11.66| 37.92 ± 11.90  | 3.62  | <0.001|
| Gender                       |               |                |       |       |
| Male                         | 873 (58.8)    | 745 (57.0)     | 0.87  | 0.352 |
| Female                       | 612 (41.2)    | 561 (43.0)     |       |       |
| Relationship status          |               |                |       |       |
| Never married                | 812 (67.6)    | 732 (72.7)     | 6.883 | 0.032 |
| Separated                    | 159 (13.2)    | 111 (11.0)     |       |       |
| Married (partnered)          | 231 (19.2)    | 164 (16.3)     |       |       |
| Education                    |               |                |       |       |
| School 7-10                  | 363 (42.7)    | 262 (36.7)     | 9.95  | 0.019 |
| School 11-12                 | 301 (35.4)    | 255 (35.8)     |       |       |
| Tertiary                     | 166 (19.5)    | 165 (23.1)     |       |       |
| Vocational                   | 21 (2.5)      | 31 (4.3)       |       |       |
| Employment                   |               |                |       |       |
| Unemployed/pensioner         | 1166 (81.4)   | 999 (78.9)     | 8.11  | 0.044 |
| Student                      | 44 (3.1)      | 61 (4.8)       |       |       |
| Home duties                  | 25 (1.7)      | 33 (2.6)       |       |       |
| Employed                     | 197 (13.8)    | 173 (13.7)     |       |       |
| Living status                |               |                |       |       |
| Alone                        | 441 (39.7)    | 410 (41)       | 9.23  | 0.1   |
| Parents                      | 331 (29.8)    | 310 (31)       |       |       |
| Spouse or partner            | 141 (12.7)    | 87 (8.7)       |       |       |
| Child(ren)-dependent         | 19 (1.7)      | 22 (2.2)       |       |       |
| Friends and others           | 149 (13.4)    | 141 (14.1)     |       |       |
| Supported                    | 29 (2.6)      | 29 (2.9)       |       |       |
| Accommodation                |               |                |       |       |
| Language                     | 1389 (93.8)   | 1227 (94.0)    | 0.067 | 0.796 |
| English                      | 92 (6.2)      | 78 (6.0)       |       |       |
| Admission legal status       |               |                |       |       |
| Voluntary                    | 669 (45.0)    | 620 (47.4)     | 1.68  | 0.195 |
| Compulsory                   | 818 (55.0)    | 687 (52.6)     |       |       |
| Diagnostic category          |               |                |       |       |
| Organic disorder             | 3 (0.2)       | 1 (0.1)        | 186.2 | <0.001|
| Substance use disorder       | 123 (8.3)     | 107 (8.2)      |       |       |
| Psychotic disorder           | 814 (54.7)    | 810 (62.0)     |       |       |
| Mood disorder                | 263 (17.7)    | 246 (18.8)     |       |       |
| Anxiety disorder             | 5 (0.3)       | 8 (0.6)        |       |       |
| Personality disorder         | 93 (6.3)      | 135 (10.3)     |       |       |
| Others                       | 186 (12.5)    | 0 (0.0)        |       |       |
| Length of stay (in days)     | 12.98 ± 15.86 | 13.08 ± 12.81  | 0.167 | 0.867 |

**Discussion**

This is the first study to investigate the effect of prolonged lockdown on psychiatric admissions. Within the sample of inpatients with a confirmed psychiatric diagnosis, we found a 12% reduction in the total number of inpatients during the lockdown period, which is lower than 20-31% reported previously (Abbas et al., 2020; Clerici et al., 2020; Tromans et al., 2020). We did not find a substantial reduction in admissions previously (Irrat et al., 2020), which could have been because this study included only one inpatient unit. Potential reasons for the current findings include fear of infection in the hospitals, changed threshold for hospital admission (Clerici et al., 2020), cessation of day leaves and no visitor policy in the hospitals during the lockdown in Victoria. Exclusion of patients with unclear psychiatric diagnoses could also have affected our estimate of the changes in admissions.

We found patients who are somewhat younger, not in relationship, better educated and not working due to studies or home duties appeared to need inpatient treatment in the lockdown period. These findings disagree our previous study (Irrat et al., 2020) in which there was no group difference in age and also, more patients had a separated status. Unlike Clerici et al. (2020), we did not notice any reduction or increase in voluntary admissions in our current study, a finding similar to our previous study (Irrat et al., 2020). It is possible that the effects of hospital setting and longer duration of the lockdown might have contributed to these differences.

We noted patients with certain diagnoses such as psychotic disorders, mood disorders, and personality disorders at higher rates during the lockdown. Abbas et al. (2020) found a similar increase in psychotic disorders and bipolar affective disorder, but they noted a reduction in personality disorder diagnosis. Conversely, Clerici et al. (2020) noted a significant reduction only for bipolar affective disorder diagnosis. We did not find any difference in diagnostic groups previously (Irrat et al., 2020). It is possible that stress perception (Holzle et al., 2020) and changes to social supports and isolation (Kozloff et al., 2020) could have contributed to psychological deterioration during the prolonged lockdown and thus leading to increased admissions for mood and psychotic disorders. Further, the changed operation of community psychiatric services in Melbourne during the lockdown, e.g., reduced outreach services and difficulties of patients adapting to digital platforms, could have increased social isolation and stress and thus leading to increased admissions for psychotic disorders and mood disorders. Similarly, increased admissions for patients with personality disorders could be related to their poor tolerance to stress associated with prolonged lockdown (Preti et al., 2020).

The clinical implications of our study are as follows. Firstly, monitoring the rate of inpatient admissions will help adjust intake parameters to meet the needs of local communities as the pandemic and lockdown periods are known risk factors for psychological issues at population level. Secondly, understanding why certain groups of patients are not receiving inpatient treatments can help develop strategies to reach out to these groups of patients, e.g., early identification and treatment through newer approaches such as telehealth. This will help to improve both the mental health and quality of life of the local communities.

Our study has limitations of a retrospective database study such as classification bias and missing information. There are strengths to our study, e.g., investigating long duration of lockdown, modest sample size and inclusion of multiple inpatient units. While our findings need replication in a larger prospective study, we conclude that the prolonged lockdown measures can adversely affect help seeking patterns of vulnerable subgroups of population.

**Authors’ statement**

All authors have equally contributed to the conceptualisation,
literature search, methodology, data analysis and interpretation, and writing and revising the manuscript.

Conflict of interest

The authors have no conflict of interest attached to this submission.

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