

Research Letter

Clinical characteristics and outcomes of psychiatric in-patients during the COVID-19 pandemic at a Specialised Psychiatric Hospital in South Africa

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ABSTRACT

Background & Objective: Worldwide, there is scant data on the management of psychiatric patients with COVID-19 infection. During the COVID-19 pandemic, a psychiatric COVID-19 unit was established at a specialised psychiatric hospital in Johannesburg, South Africa, with integrated care to meet the needs of a vulnerable psychiatric in-patient population. We describe the clinical characteristics and outcomes of these patients.

Methods: This study is a single-centre, retrospective, descriptive analysis of COVID-19-positive patients admitted to the COVID-19 ward between June 2020 and February 2022 with a known mental illness, and predominantly mild to moderate COVID-19 illness, as assessed by the COVID-19 severity index using the NEWS2 score as a screening tool. Outcomes were recorded as discharged from the COVID-19 ward, transferred to a medical facility for higher care or death.

Results: Fifty-one patients were treated during the period. The majority (39/51, 76.5%) were female. Common comorbidities were HIV, hypertension, and diabetes. Common psychiatric diagnoses were schizoaffective disorder, bipolar disorder, and schizophrenia. The most common COVID-19 symptoms were sore throat, cough, and fever. The most common psychiatric symptoms were psychosis, mania, and aggressive behaviour. Patient outcomes were very good, with no deaths. Only a small number (4/51; 7.8%) needed transfer to a medical ward for more specialised care.

Conclusion: This retrospective review describes the clinical management of COVID-19 in psychiatric patients with severe behavioural disturbances and associated medical comorbidities. Integrated medical treatment was administered by mental health care nurses and doctors, with good outcomes. Our findings align with internationally reported figures and add to the evidence base for managing psychiatric patients during future pandemics.

Keywords: COVID-19, psychiatry, NEWS2 score, integrated care

INTRODUCTION

Neuropsychiatric features of COVID-19 in psychiatric inpatients are globally reported(1), but few data regarding this group of patients have been reported from South Africa.(2–4) Psychiatric patients are vulnerable and face challenges with medical treatment in medical wards.(5) During the pandemic, numerous challenges, such as the communal nature of therapeutic spaces in psychiatric settings, adherence to wearing masks, symptom screening, and infection control, were faced by those with behavioural disturbances.(6) When SARS-CoV-2 was first identified, much uncertainty existed around how to protect or mitigate infection and prevent the rapid spread of COVID-19 in psychiatric in-patients. Global guidelines and protocols

did not target this vulnerable population.(7) While the psychological and psychosocial impact of COVID-19 was widely recognised, dedicated units to treat COVID-19 in psychiatric patients were sorely lacking.

As far as we are aware, there are few outcome data from South Africa or anywhere else in Africa for hospitalised patients with psychiatric illness. However, a dedicated COVID-19 unit was established at a specialised psychiatric hospital in Johannesburg, South Africa, to provide integrated medical and psychiatric care for mild to moderate COVID-19 cases during the pandemic. This study thus aimed to describe the clinical characteristics of psychiatric inpatients treated in a dedicated COVID-19 ward at a specialist psychiatric hospital and to assess associations among symptoms, age, and diagnosis.

METHODS

This study is a retrospective review of psychiatric patients who tested positive for COVID-19 (rapid antigen test, or COVID-19 RT-PCR) and who were admitted to the COVID-19 ward at Tara Psychiatric Hospital in Johannesburg, South Africa, between June 2020 and February 2022. COVID-19 severity was measured using the COVID-19 severity index, which incorporated the NEWS2 score.(8) The severity index risk chart classifies risk as: (0-2) low risk; (3-5) moderate risk; (6-7) high risk; (8 or more), and critical. Only patients with mild-moderate COVID-19 and comorbid psychiatric illness were admitted to the COVID-19 ward. Any patient with a score of 6 or higher was transferred to the Central Academic Hospital.

Demographic data (age, sex), clinical characteristics of COVID-19 disease (vital signs, COVID-19 severity), psychiatric symptoms, and psychiatric diagnoses were captured for each patient. These admissions spanned over 4 waves of the COVID-19 pandemic. The COVID-19 vaccination status of patients was not recorded, with 45% of patients were admitted to the COVID-19 ward before COVID-19 vaccinations were available to the South African public.

Statistical Analysis

Statistica Version 13.3. was used. Descriptive statistics, including frequencies and percentages, have been used to display data. Non-normally distributed data are presented as medians together with interquartile ranges (IQRs). Statistically significant differences between categorical variables were calculated using the Chi-Squared

test. For comparison of categorical variables with expected frequencies of 5 or less, the Fisher's Exact test was used. Continuous non-normally distributed data were compared using the Mann-Whitney U Test. P-value of 0.05 was determined as statistically significant.

Ethical clearance for the study was obtained from the University of Witwatersrand Research Ethics Committee (ref no. M220412).

RESULTS

During the study period, 51 patients with COVID-19 met the inclusion criteria. The largest number of admissions occurred during the first and third waves of the pandemic. Descriptive demographics, comorbidities, and vital signs by age groups are described in Table 1. The median age for females was 35 years (IQR 23-47), and for males was 26 years (IQR 18-35). The difference was statistically significant ($p=0.001$). In the study cohort, 80% had contact with a COVID-19 patient. Common comorbidities were HIV (21.6%), hypertension (11.8%), and diabetes (5.9%).

The primary DSM-5 diagnosis of psychiatric patients admitted to the COVID-19 ward is shown in Table 2. Of the psychiatric presentations at admission, the most common were psychotic disorders. Seventeen (33.3%) of these admissions were first onset psychiatric presentations of varying diagnosis with no pre-existing psychiatric history: (Bipolar disorders $n = 2$ (3.9%); schizophrenia $n = 2$ (3.9%); schizoaffective disorder $n = 4$ (7.8%); substance induced psychosis $n = 2$ (3.9%); psychosis due to other medical conditions $n = 5$ (9.8%); brief psychotic disorder $n = 1$ (1.9%) and Major Depressive Disorder (MDD) $n = 1$ (1.9%)

Table 1: Comparative data on demographics and vital signs in psychiatric patients with COVID-19 infection on admission to the COVID-19 unit.

	All	0-17	18-49	50-64	>65
Total (in age band)	51	8	34	4	5
Male, n (%)	12 (23.5)	2 (3.9)	9 (17.6)	0 (0)	1 (2.0)
Female, n (%)	39 (76.5)	6 (11.8)	25 (49.0)	4 (7.8)	4 (7.8)
Comorbidities					
Hypertension	6 (11.8)	0 (0.0)	3 (5.9)	0 (0.0)	3 (5.9)
Diabetes	3 (5.9)	0 (0.0)	0 (0.0)	1 (2.0)	2 (3.9)
HIV	11 (21.6)	0 (0.0)	11 (21.6)	0 (0.0)	0 (0.0)
Vitals (median [IQR])					
HR (beats/min)	92 [75-100]	92[67-94]	89 [73-102]	96.5 [89-106.5]	96.5 [89-106.5]
Systolic BP(mmHg)	120 [108-129]	119 [103-133]	120 [108-128.5]	126 [114-135.5]	126 [114-135.5]
Diastolic BP(mmHg)	77 [67-82]	77 [70-80]	77 [66.5-82]	70.5 [68.5-79.5]	70.5 [68.5-79.5]
Respiratory rate	18 [18-20]	18 [18-18]	20 [18-22.5]	20 [18-25]	20 [18-25]
Oxygen saturation (%)	97 [94-98]	97 [96-99]	97 [94.5-98.5]	94.5 [93.5-96]	94.5 [93.5-96]

Table 2: Primary DSM-5 diagnosis of patients admitted to the COVID-19 ward.

DSM-5 diagnostic category	Number of patients (n = 51,%)
Psychotic disorder	28 (55.0)
Schizophrenia	7 (13.7)
Psychotic disorder due to AMC	7 (13.7)
Substance-induced psychotic disorder	2 (3.9)
Schizoaffective disorder	12 (23.5)
Mood disorders	13 (25.4)
Bipolar I disorder	9 (17.6)
Substance-induced bipolar and related disorder	1 (2.0)
Major depressive disorder	3 (5.9)
Neurocognitive disorders	5 (9.8)
MNCD	4 (7.8)
MNCD due to HIV	1 (2.0)
Other diagnoses	5 (9.8)
Eating disorder	1(2.0)
Reactive attachment disorder	1 (2.0)
Personality disorder	3 (5.9)

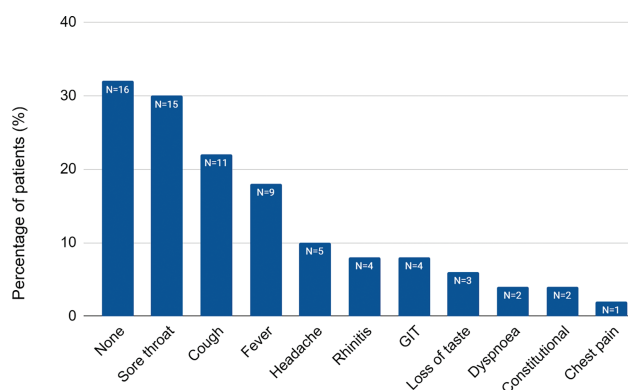
MNCD= Mild neurocognitive disorder

Medical treatment during admission included vitamin D, zinc, antibiotics, steroids, paracetamol, low molecular weight heparin, oxygen, and sedation with benzodiazepines. Antibiotics and steroids were reserved for patients with oxygen saturation below 95% and who showed clinical deterioration. Other supportive outcomes documented included oxygen therapy and interfaces for oxygen supply (nasal prongs, cannula, mask, mask with reservoir, and CPAP).

During hospitalisation, 18% of the study cohort required oxygen by face mask and 4% via continuous positive airway pressure (CPAP). Overall, patient outcomes were good, with very few (N = 4, 7.8%) requiring transfer to a medical ward and no patients died during the study period.

The National Early Warning Score (NEWS2), a severity score at the time of the patient's admission to the COVID-19 ward, was used to trigger a more active response from nursing staff with minimal intensive care unit experience. The NEWS2 score was reproduced from the Royal College of Physicians(8). Forty-one patients scored low to low-medium scores, and ten patients had medium-high scores. No deaths occurred in any of the groups.

Figure 1 depicts the prevalence of reported symptoms in the symptomatic cohort. The predominant symptoms were cough (22%), sore throat (30%), and a fever (18%).

**Figure 1:** COVID-19 symptoms reported at presentation

There was no significant difference in respiratory rate, blood pressure, temperature, or oxygen saturation in either the symptomatic or asymptomatic cohorts during the admission.

Table 3 shows that 65% of psychiatric patients admitted to the COVID-19 ward were asymptomatic despite being COVID-19 positive. On admission to the COVID-19 ward, both symptomatic and asymptomatic patients had similar heart rates, temperatures, respiratory rates, and blood oxygen saturation. There was a statistically significant difference in systolic blood pressure between symptomatic and asymptomatic patients ($p=0.02$). The most common psychiatric symptom amongst both symptomatic and asymptomatic patients was psychosis. Psychotic disorders were the most common disorders diagnosed in symptomatic patients. The most common diagnosis in the asymptomatic group was a mood disorder.

DISCUSSION

Management of psychiatric in-patients with COVID-19 receiving integrated medical care and psychiatric treatment during the pandemic in South Africa has not been previously described. Much has been written about the mental health effects of COVID-19 and the psychosocial determinants.(9,10) To our knowledge, during the pandemic no dedicated unit existed in South Africa during the pandemic that managed psychiatric COVID-19 inpatients with medical therapies, including oxygen, or provided psychiatric treatment in a dedicated psychiatric COVID-19 ward. Similar management of COVID-19 in psychiatric patients in a dedicated ward has been described in New York, but with no detailed medical characteristics. Overall, outcomes were positive.(11) Similarly, in China, a COVID-19 unit for first-episode psychiatric in-patients in Wuhan described clinical characteristics, management, and outcomes in a 25-patient sample. In this sample, no deaths were reported, and twenty-one patients had a good recovery.(12) Integrated care was used in the Chinese cohort, which involved medical treatment of psychiatric patients by mental health specialists in a psychiatric intensive care

Table 3: Comparative data on demographics, vital signs, psychiatric symptoms/diagnosis in COVID-19 symptomatic and asymptomatic patients on admission to the COVID-19 unit.

	Symptomatic (n=33)	Asymptomatic (n=18)	P-value
Age (years as n (%))			
0-17	6 (18.2)	2 (11.1)	0.01 *†
18-49	20 (60.6)	14 (77.8)	
50-64	3 (9.1)	1 (5.6)	
>65	4 (12.1)	1 (5.6)	
Sex: n (%)			
Male	6 (18.2)	6 (33.3)	0.36 ‡
Female	27 (81.8)	12 (66.7)	
Vitals (median[IQR])			
HR	90 [75-100]	93 [70.5-99.5]	0.772 §
Systolic	124 [114.5-134]	114 [105.5-120.5]	0.02 * §
Diastolic	77.5 [70-83]	70 [65.5-78]	0.069 §
Temperature (°C)	36.5 [36.1-36.8]	36.3 [35.95-36.5]	0.150 §
Respiratory rate	18 [18-23]	18 [18-20]	0.390 §
Oxygen sats %	97 [94-98]	98 [95-99]	0.124 §
Psychiatric Symptoms (%)			
Psychosis	20 (60.6)	15 (83.3)	0.13 †
Mood	2 (6.06)	3 (16.7)	
Psychosis and mania	6 (18.2)	0 (0.0)	
Aggression	7 (21.2)	3 (16.7)	
Delirium	3 (9.1)	0 (0.0)	
Psychiatric diagnosis(%)			
Psychotic disorder	22 (66.7)	6 (33.3)	0.68†
Mood disorder	5 (15.2)	8 (44.4)	
MNCD	4 (12.1)	1 (5.6)	
Other	3 (9.1)	2 (11.1)	

*P- value <0.05

†Two-sided Fisher's Exact Test

‡Two-tailed Chi-square Test

§Mann-Whitney U Test

unit using oxygen therapy, non-invasive mechanical ventilation, and other medical treatments.

The unit at Tara Hospital was established by adapting an existing ward with minor infrastructure modifications to create dedicated donning-and-doffing areas that met infection prevention and control (IPC) requirements for personal protective equipment (PPE), while preserving the communal therapeutic setting central to psychiatric care. As in the Chinese study, we had an excellent clinical outcome, with no deaths reported during the study period. (12) The low mortality rate was likely related to admitted

patients having mild-moderate disease. Furthermore, the low patient-to-nurse ratio enabled individualised care and rapid responses to deterioration in patients' conditions. Upskilling of nursing and medical doctors allowed CPAP to be offered to patients whose disease severity progressed while they were waiting to be transferred to medical facilities for higher levels of care.

Challenges such as the hospital not being in close proximity to a general hospital with facilities to manage serious medical conditions, were addressed by implementing comprehensive guidelines for screening visitors, staff, and

patients at the start of the pandemic. Creative planning of infrastructure in line with IPC compliance and the placement of oxygen cylinders at each bed in the COVID-19 ward ensured rapid respiratory treatment and greater continuity of care. Dedicated teams that met weekly were set up for communication, PPE, screening, quarantine, and COVID-19 treatment. Nursing staff attended ICU courses at the central hospital, and clinicians attended training on the use of CPAP machines and various online COVID-19 courses. Psychiatrists and psychiatric registrars managed these patients as if in an 'intensive care unit' with telephonic support from medical specialists at the central academic public hospital.

We propose that for future pandemics, psychiatrists play a role in the management of psychiatric patients with acute medical illnesses. Psychiatric patients have particular pharmacological and non-pharmacological containment needs which are best managed by psychiatric specialists. We propose creating and training standard operating procedures (SOPs) for pandemics, which allow for the effective isolation of psychiatric patients and follow best evidence-based practice, creating a step-by-step process for staff managing patients with acute medical disease.

LIMITATIONS

The study is limited by a small sample size, as admissions to the COVID-19 ward were constrained by capacity and infrastructure constraints. Incomplete record keeping and other limitations of retrospective reviews also apply. The patients in this study and the favourable outcomes may reflect selection bias; patients admitted to the COVID-19 ward had only mild to moderate disease severity, and these patients were more likely to have a favourable outcome. There was insufficient documentation on whether patients had received COVID-19 vaccines prior to admission to the COVID-19 ward. This limited the ability to determine if there was an association between various COVID-19 disease severity and vaccine status.

CONCLUSION

This retrospective review describes the integrated care of patients both with COVID-19 and a psychiatric illness in a psychiatric inpatient unit set up during the COVID-19 pandemic. Psychiatrists managed COVID-19, various medical comorbidities, and psychiatric illness. Early nursing intervention was based on the NEWS2 severity score. Upskilling of medical skills in mental healthcare workers

can be applied in future medical crises. The low mortality rate and overall positive outcomes suggest it is possible to manage medically unwell psychiatric patients in a psychiatric ward.

Author contributions


SF and NM contributed to the writing and editing of the article.

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