COVID-19

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Demographic and clinical factors associated with psychiatric inpatient admissions during the COVID-19 pandemic

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Abstract

Objective: The COVID-19 pandemic may cause a major mental health impact. We aimed to identify demographic or clinical factors associated with psychiatric admissions where COVID-19 was attributed to contribute to mental state, compared to admissions which did not.

Methods: A retrospective cohort study was undertaken of inpatients admitted to Northern Psychiatric Unit 1, Northern Hospital in Melbourne, Victoria, Australia during 27/02/2020 to 08/07/2020. Data were extracted for participants who identified COVID-19 as a stressor compared to participants who did not. Fisher's exact test and Mann-Whitley rank sum test were used.

Results: Thirty six of 242 inpatients reported the COVID-19 pandemic contributed to mental ill health and subsequent admission. Reasons given included social isolation, generalized distress about the pandemic, barriers to support services, disruption to daily routine, impact on employment, media coverage, re-traumatization, cancelled ECT sessions, loss of loved ones, and increased drug use during the lockdown. Chronic medical conditions or psychiatric multimorbidity were positively associated and smoking status was negatively associated with reporting the COVID-19 pandemic as a contributor to mental ill health.

Conclusion: Screening and identifying vulnerable populations during and after the global disaster is vital for timely and appropriate interventions to reduce the impact of the pandemic worldwide.

Keywords: COVID, pandemic, inpatient, mental health, natural disaster

The COVID-19 pandemic is a global disaster which has caused significant morbidity and mortality.[1] It has been speculated that financial stress, disrupted daily routine, isolation, and fear/uncertainty from the pandemic may lead to distress and exacerbation of mental disorders or development of new mental health issues.[2] Vulnerable groups may include elderly people and those with medical conditions or who are homeless.[3] Isolation and intense media coverage could contribute to psychotic symptoms in serious mental illness.[4] We aimed to identify demographic or clinical factors associated with inpatient psychiatric admissions where COVID-19 was attributed to contribute to mental state, compared to admissions which did not.

Methods

Setting and participants

This was a retrospective cohort study which used electronic files of adult inpatients admitted to Northern

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Psychiatric Unit 1 of Northern Hospital in Melbourne, Victoria, Australia. Admissions between 27/02/2020 (the date the COVID-19 pandemic was declared by the Australian Prime Minister[5]) to 08/07/2020 (the date before Melbourne was placed into a second lockdown[6]) were included. Inclusion criteria included explicit documentation that reported patient/collateral history which clearly identified COVID-19 as a stressor which had precipitated or contributed to poor mental state, with subsequent inpatient admission. Exclusion criteria included documentation of COVID-19 that did not directly identify COVID-19 as a stressor, such as incorporation of COVID-19 into delusions/hallucinations.

Design and data collection

A trained clinician reviewed registration forms, admission note, and discharge summary for each file to assess whether COVID-19 was attributed to mental state as per documentation. Demographic and clinical data were extracted and recorded for participants who identified COVID-19 as a stressor compared to participants who did not.

Demographic data included age, sex, Aboriginal or Torres Strait Islander status, country of birth, English speaking status, relationship status, living circumstances, education and employment, and presence of dependents. Clinical data included primary diagnosis on discharge, medical comorbidity, psychiatric multimorbidity, trauma history, substance use, family or patient history of mental illness, self-harm or self-harm ideation, and suicidal ideation or recent suicide attempt.

Statistical methods

Fisher's exact test and Mann-Whitley rank sum test were used to identify demographic or clinical factors associated with inpatient admissions where COVID-19 was identified as a contributor to mental state as per documentation. Significance level was set at $p < 0.05$. Minitab 17 was used for statistical analysis.[7]

Ethics

The study was approved by Northern Health (ALR 104.2020) and Melbourne Health (QA2020203).

Results

Demographic and clinical characteristics

Two hundred and forty-three adult psychiatric inpatients were admitted to Northern Psychiatric Unit 1, Northern Hospital between 27/02/20 to 08/07/20. Of these, one duplicate file was excluded. Thirty-six patients had documentation indicating COVID-19 or COVID-19 restrictions contributed to mental ill health and subsequent psychiatric admission. The average age was 38.1 years, and most were female (n = 138, 57.0%), born in Australia (n = 179, 74.0%), neither Aboriginal nor Torres Strait Islander (n = 225, 93.0%), and spoke English (n = 236, 97.5%) (Table 1). Most were single (n = 179, 74.0%), unemployed (n = 200, 82.6%), had not completed secondary education (n = 88, 36.4%) and lived with others (n = 169, 69.8%) without dependents (n = 180, 74.4%) (Table 1).

The most common primary diagnosis was schizophrenia (n = 68, 28%) (Table 2) and the most commonly used drug was tobacco (n = 85, 35.1%) (Table 1). Most participants had a psychiatric history (n = 220, 90.9%) and psychiatric multimorbidity (n = 124, 51.2%) while 29.3% (n = 71) had a known family history of mental illness, 39.3% (n = 95) had medical comorbidity and 27.7% (n = 67) had a documented trauma history (Table 1). Suicidal ideation (n = 102, 42.1%), suicide attempt (n = 36, 14.9%), self-harm ideation (n = 51, 21.1%) and self-harm (n = 23, 9.5%) were present immediately before or during the admission in this population (Table 1).

Demographic and clinical factors associated with psychiatric inpatients who identified COVID-19 as a stressor

Having a comorbid medical condition/s (p = 0.003, OR = 3.293) or more than one mental disorder (p = 0.029, OR=1.602) were associated with reporting the COVID-19 pandemic as a contributor to mental state and subsequently psychiatric admission (Table 1). Tobacco smoking was also significantly associated with mental state (p = 0.015, OR = 0.321) however other drug use was not (Table 1). The majority of factors were not significantly associated with the COVID-19 pandemic being a contributor to mental ill health (Table 1).

COVID-19 as a contributor to mental ill health and inpatient psychiatric admission

The most common reasons reported for the COVID-19 pandemic contributing to mental ill health were social isolation, primarily through loss of physical contact with family and friends, and generalized distress due to the impact and implications of the COVID-19 pandemic and restrictions (Table 3). The latter included guilt about insufficiently adhering to restrictions, fear of catching or dying from COVID-19, and severe COVID-19 preoccupation resulting in anxiety. Barriers to support services included outreach visit cancellations, lack of face-to-face contact with mental health services, delays in moving to supported accommodation, and difficulty obtaining appointments for medication prescriptions. Disruption to routine and daily activities included anxiety around routine change and being unable to remain preoccupied, engage in fulfilling activities, or use previous coping strategies.

Participants also reported depressive symptoms from losing employment due to the COVID-19 crisis, resulting in

Table 1. Demographic and Clinical Factors Associated with Inpatient Psychiatric Admission Due to the COVID-19 Pandemic

	Patients who did not report COVID-19 as contributing to poor mental health n = *206 (85.1%)* n *(%)*	*Patients who reported COVID-19 as a stressor contributing to poor mental health* n = *36 (14.9%)* n *(%)*	*All patients* n = *242 (100%)*	p *value (significance level = 0.05)*	*Odds ratio*
Demographic factors					
Age					
<25 years	33	6	39	0.348	
25–49 years	125	22	147		
⩾50 years	47	9	56		
Sex					
Male	84 (34.7%)	19 (7.9%)	103 (42.6%)	0.204	1.623
Female	121 (50.0%)	17 (7.0%)	138 (57.0%)		0.629
Aboriginal or Torres Strait Islander					1.455
Yes	12 (5.0%)	3 (1.2%)	15 (6.2%)	0.477	
No	192 (79.3%)	33 (13.6%)	225 (93.0%)		
Country of birth					
Australia	153 (63.2%)	26 (10.7%)	179 (74.0%)		0.772
Born overseas	50 (20.7%)	11 (45.5%)	61 (25.2%)	>0.05	1.269
English speaking status					
English speaking	200 (82.6%)	36 (14.9%)	236 (97.5%)	>0.05	0.9
Non-English speaking	5 (2.1%)	1 (0.5%)	6 (2.5%)		1.11
Single	150 (62.0%)	29 (12.0%)	179 (74.0%)	0.684	1.547
Living alone	60 (24.8%)	13 (5.4%)	73 (30.2%)	0.146	1.375
Unemployed	174 (72.0%)	26 (10.7%)	200 (82.6%)	0.056	0.478
Completed secondary education					
Yes	72 (29.8%)	16 (6.6%)	83 (34.3%)	0.126	2.083
No	75 (31.0%)	8 (3.3%)	88 (36.4%)		
Unknown	58 (24.0%)	13 (5.4%)	71 (29.3%)		
Dependents	54 (22.3%)	8 (3.3%)	62 (25.6%)	0.683	0.804
Homeless	20 (83.0%)	3 (1.2%)	23 (9.5%)	0.683	0.845
Rural address	7 (29.0%)	1 (0.4%)	8 (3.3%)	1	0.81
Clinical factors					
Self-harm ideation	39 (16.1%)	12 (5.0%)	51 (21.1%)	0.080	2.141
Self-harm	18 (7.4%)	5 (2.1%)	23 (9.5%)	0.364	1.685
Suicidal ideation	82 (33.9%)	20 (8.3%)	102 (42.1%)	0.147	1.890
Suicide attempt	33 (13.6%)	3 (1.2%)	36 (14.9%)	0.314	0.477
Current drug use					
Tobacco	79 (32.6%)	6 (2.5%)	85 (35.1%)	*0.015*	*0.321*
Cannabis	75 (31.0%)	9 (3.7%)	84 (34.7%)	0.190	0.582
Alcohol	54 (22.3%)	8 (3.3%)	62 (25.6%)	0.683	0.804
Methamphetamine	51 (21.1%)	4 (1.7%)	55 (22.7%)	0.086	0.380
Opiates	8 (3.3%)	3 (1.2%)	11 (4.5%)	0.381	2.250
Amphetamines	4 (1.7%)	0 (0.0%)	4 (1.7%)	1	0
Benzodiazepines	4 (1.7%)	0 (0.0%)	4 (1.7%)	1	0
Cocaine	2 (0.8%)	0 (0.0%)	2 (0.8%)	1	0
Ecstasy	3 (1.2%)	0 (0.0%)	3 (1.2%)	1	0
LSD	2 (0.8%)	0 (0.0%)	2 (0.8%)	1	0
GHB	2 (0.8%)	0 (0.0%)	2 (0.8%)	1	0
None	58 (24.0%)	16 (6.6%)	74 (30.6%)	0.082	2.041
Medical comorbidity	72 (29.8%)	23 (9.5%)	95 (39.3%)	**0.003**	**3.293**
Psychiatric multimorbidity	102 (42.1%)	22 (9.1%)	124 (51.2%)	**0.029**	**1.602**
Trauma history	53 (21.9%)	14 (5.8%)	67 (27.7%)	0.162	1.837

(continued)

Table 1. (continued)

	Patients who did not report COVID-19 as contributing to poor mental health n = *206 (85.1%)* n *(%)*	*Patients who reported COVID-19 as a stressor contributing to poor mental health* n = *36 (14.9%)* n *(%)*	*All patients* n = *242 (100%)*	p *value (significance level = 0.05)*	*Odds ratio*
Family history of psychiatric disorder					
Yes	62 (25.6%)	9 (3.7%)	71 (29.3%)	0.443	3.194
No	22 (9.1%)	1 (0.4%)	23 (9.5%)		
Unknown	121 (50.0%)	27 (11.2%)	148 (61.2%)		
Patient history of psychiatric disorder	188 (77.7%)	32 (13.2%)	220 (90.9%)	0.348	0.766

Table 2. Primary Diagnoses of Psychiatric Inpatients During the COVID-19 Pandemic

Primary diagnosis on discharge	*Patients who did not report COVID-19 as contributing to poor mental health* n *(%)*	*Patients who reported COVID-19 as a stressor contributing to poor mental health* n *(%)*	*All patients* (n = *242)*
Schizophrenia	59 (24.4%)	9 (3.7%)	68 (28%)
Schizoaffective disorder	35 (14.6%)	4 (1.7%)	39 (16%)
Bipolar disorder	21 (8.7%)	5 (2.1%)	26 (11%)
Situational crisis	18 (7.4%)	2 (0.8%)	20 (8%)
Depression	15 (6.2%)	2 (0.8%)	17 (7%)
Borderline personality disorder	12 (5.0%)	4 (1.7%)	16 (7%)
First episode psychosis	11 (4.5%)	3 (1.2%)	14 (6%)
Drug induced psychosis	10 (4.1%)	1 (0.4%)	11 (5%)
Other psychotic disorders (psychosis not otherwise specified, brief psychotic disorder, delusional disorder, postpartum psychosis)	9 (3.7%)	1 (0.4%)	10 (4%)
Other mental disorders (generalized anxiety disorder, general psychiatric assessment, acute stress reaction, cluster B traits, complex post-traumatic stress disorder, obsessive compulsive disorder, substance use disorder)	9 (3.7%)	1 (0.4%)	10 (4%)
Adjustment disorder	3 (1.2%)	3 (1.2%)	6 (2%)
Post-traumatic stress disorder	4 (1.7%)	1 (0.4%)	5 (2%)
Total	206 (85.1%)	36 (14.9%)	242 (100%)

financial issues or a lack of meaningful activity. Overexposure of COVID-19 media coverage such as television was reported by four participants as impacting their mental health. Re-traumatization included restrictions reminding participants of government/police control they had experienced before immigration, confinement at home where domestic violence had occurred, or confinement reminding them of previous involuntary inpatient admissions. Two people who had maintenance electroconvulsive therapy (ECT) sessions cancelled had a relapse of schizophrenia and schizoaffective disorder. Distress from death of a loved one as a result of the pandemic and increased drug use attributed to the lockdown were also reported by participants as contributors to mental ill health.

Discussion

In this cohort of 242 psychiatric inpatients, 36 participants reported the COVID-19 pandemic had contributed to their mental state and admission. Reasons given were consistent with previous speculation that social

Table 3. COVID-19 As A Contributor to Mental Ill Health and Psychiatric Inpatient Admission

Reason Documented For COVID-19 Contributing To Mental State	*Number of participants*
Social isolation	12
Generalized distress due to impact and implications of COVID-19 and restrictions	12
Barriers to accessing mental health and support services	6
Disruption to routine and daily activities	6
Adverse impact on private business or loss of employment due to COVID-19	6
Overexposure of COVID-19 related media	4
Re-traumatization reaction	3
ECT sessions cancelled due to COVID-19 restrictions	2
Loss of loved ones impacted by COVID-19	1
Increased drug use during COVID-19 lockdown	1

*Some participants reported multiple reasons, giving a total of >36.

distancing and isolation during the pandemic may particularly affect people who experience mental health issues.[4,8] The results also reflect previous findings that natural disasters may affect mental health through disrupted routine, increased media consumption, generalized distress and uncertainty about the disaster itself,[2] and reduced social interactions.[3] Furthermore, loss of routine, employment or schooling can lead to a wider loss of sense of purpose.

Having a comorbid medical condition or psychiatric multimorbidity were associated with reporting COVID-19 as contributing to mental ill health and psychiatric admission. Previous research has reported chronic medical conditions are associated with post-disaster mental illness[9] and medical multimorbidity during the COVID-19 pandemic was associated with isolation.[10] In this study, the negative correlation between smoking status and attributing COVID-19 as a stressor was difficult to interpret due to disproportionate sample representation between groups. Other studies have found that experiencing traumatic events during natural disasters has been linked to increased tobacco use.[11, 12]

The association between having multiple psychiatric conditions and reporting COVID-19 as a stressor on mental health is an important finding. To the best of our knowledge, previous research has only focused on the association between increased physical multimorbidity and natural disaster.[13] This finding may add to current knowledge regarding vulnerability among people with severe mental illness in natural disasters[4] or suggest that psychiatric multimorbidity can occur in pandemic conditions.

Strengths of this study include analysis of multiple factors implicated in disaster medicine literature. Limitations include reliance on documentation integrity and lack of longitudinal assessment due to the retrospective cross-sectional study design. Our small sample size may have also impacted effect size and findings. However, this is the largest cohort of this type and the data have yielded valuable insights into an area of critical need.

Psychoeducation, coping strategies, peer support, and potentially psychotherapy or pharmacotherapy may be beneficial for at-risk populations and the general community during the COVID-19 pandemic.[2] Telehealth and clear communication from mental health services are key to meet the rising mental health challenge among people with severe mental illness or psychiatric multimorbidity.[2] Social media and technology may bridge social distancing, and clear information dissemination led by the government, healthcare professionals, and media are needed. Implementing routine and structure during restrictions may also be useful.

Screening and identifying populations at risk of mental health issues in response to the pandemic is vital. This may include screening for mental ill health when patients present for care of chronic medical conditions, such as through general practice, and screening for co-morbid psychiatric conditions among mental health presentations. This would support timely and appropriate interventions, which are essential for reducing the impact of COVID-19 and other natural disasters on mental health in the future.

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