

**Types and Characteristics of Admissions to a Tertiary Psychiatric Hospital During
The COVID-19 Pandemic: A Retrospective Observational Study from the United
Arab Emirates**

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Abstract

Objectives: The purpose of the study was to research the socio-demographic and clinical profile of admissions to a psychiatric hospital in the United Arab Emirates during the early months of the coronavirus pandemic. This profile was then compared with the corresponding months in 2019 to study the effect of the pandemic on changes in the mental healthcare system. **Methods:** Data about patients admitted from March 11th to June 11th in 2019 and in 2020 was collected anonymously from hospital electronic medical records. First, socio-demographic and clinical characteristics were compared across 2019 and 2020 patients with Pearson's Chi-square test for categorical variables and Mann-Whitney U test for numerical

variables. Then, a multiple logistic regression model was created to find correlates of admission in 2020. **Results:** A total of 337 patients were admitted to the hospital during the study in 2020 compared with 189 patients in the corresponding months in 2019. In the multiple logistic regression model, admission to the hospital during 2020 was significantly associated with a bipolar disorder diagnosis (OR=1.902, p=0.028) and with no prior psychiatric history (OR=4.255, p<0.001). **Conclusions:** This study is unique for evaluating the patterns of hospitalization at a specific psychiatric hospital during the first few months of the pandemic in the UAE. The results of this study could be attributed to a complex set of reasons. The findings of this study will support the public health sector in designing mental health strategies in pandemic situations. A longer, multicenter study would give more insight into the overall impact of the pandemic on mental health.

Keywords: mental health, COVID-19, psychiatry

Introduction

The first cases of the novel coronavirus disease of 2019 (COVID-19) were reported to the World Health Organization (WHO) during December 2019 from Wuhan, China.¹ Since then, COVID-19 has rapidly spread to other countries and the WHO declared the novel coronavirus as a global pandemic on the 11th of March 2020.¹ The pandemic has brought along various socio-economic challenges. Apart from the constant fear of contracting the virus, individuals globally faced a new reality that included working from home, lockdowns, temporary unemployment, salary cuts and travel restrictions.²

There has been several research studies that have showed the psychological impact of the COVID-19 pandemic. A meta-analysis of studies on the general population found elevated

levels of anxiety and depression.³ Another meta-analysis of studies about those who have contracted the virus found a high proportion of psychological problems including anxiety (16.6%), depression (37.7%), post-traumatic stress disorder (41.5%), insomnia (68.3%), somatization (36.5%) and fear (47.6%).⁴ There is also evidence of neuropsychiatric manifestations among those who have contracted the virus.⁵ In particular, new onset psychosis has been described in patients suffering from COVID-19.⁶

A few studies in the literature have also looked at the profile of psychiatric hospitalizations during the pandemic. In Spain and the United Kingdom (UK), when comparing “pandemic” months in 2020 to 2019, there was an increase in the percent of hospitalizations with psychosis or mania.^{6, 7, 8} Also from the UK, one study found significantly less hospital admissions when considering the mental health services of acute adults and of older people during the pandemic.⁹ Another study from Italy found a reduction in all types of disorders studied (affective, personality, substance, and schizophrenia spectrum disorders).¹⁰ In Australia, a recent study during the pandemic reported an increase mainly in the rate of admission for patients with psychotic and personality disorders.¹¹

The United Arab Emirates (UAE) is a middle-eastern Asian country that consists of 7 emirates and more than 200 nationalities and a total population of around 9.8 million.¹² The first case of COVID-19 in the UAE was reported on January 29th 2020.¹³ UAE has been one of the foremost countries to introduce stringent measures to control the spread of the virus. During the first months of the pandemic, the country had responded effectively by organizing a nationwide sterilization campaign that began on March 26th and had lasted until June 24th.^{14, 15} During that time, different safety and restriction measures were applied to control and minimize crowding such as curfews and rules for remote work and education.¹⁶

Al Amal Psychiatric Hospital is a specialized mental health facility that is based in Dubai and has around 168 beds. The hospital caters to the emirate of Dubai and the northern emirates (Ajman, Fujairah, Ras Al Khaimah, Sharjah, and Umm Al Quwain) and is a public sector hospital. Dubai and the northern emirates are estimated to constitute around 80% of the UAE population.¹⁷ During the months of this study, other psychiatric inpatient facilities in Dubai and the northern emirates were temporarily closed and all psychiatric admissions were diverted to Al Amal Psychiatric Hospital. The hospital took various infection control measures to reduce the risk of infection among patients and staff.

A previous study from the UAE and before the start of the COVID-19 pandemic had shown psychotic illnesses to be the most common reason for admission within a psychiatric hospital setting.¹⁸ However, an evaluation of the profile of inpatient admissions during the pandemic is also important and provides guidance to help tailor the focus of inpatient care. To our knowledge, the nature of psychiatric presentations to the inpatient setting during the pandemic has not been examined yet in the UAE. Therefore, the aim of this study was to evaluate the characteristics of psychiatric admissions during the first three months of the COVID-19 pandemic and then to compare that with a similar period in 2019 to study the effect of the pandemic on changes in the mental healthcare system.

Methods

Setting and study design

This is a retrospective observational study that includes patients who were admitted to inpatient units at Al Amal Psychiatric Hospital. The data was collected in September 2020 and information about the nature of presentations was collected during the first three months

from the time the WHO declared COVID-19 as a pandemic (11/03/2020 to 11/06/2020) and compared with the same three months' period in 2019. Admissions due to primary substance misuse were excluded from the study. Patients who presented with substance induced mood and psychotic disorders and who required admission to acute psychiatric wards were part of the study. Ethical approval was obtained from Al Amal Psychiatric Hospital research committee and the Ministry of Health and Prevention (MOHAP) research ethics committee (reference number: MOHAP/DXB-REC/ JAA/No.100 /2020).

Data collection

The data was collected anonymously from the electronic medical records of the hospital (n=189 in 2019 and n=337 in 2020). For patients with multiple admissions, all admissions for the subject during the concerned time frame were included. The data obtained from the electronic medical records included gender, age, nationality, marital status, employment status, source of referral, previous psychiatric history, length of stay, and primary diagnosis (main reason for admission) as per International Classification of Disease-10 (ICD-10).

Data analysis

First, descriptive analysis was performed to show percentages for categorical variables and the mean and standard deviation (SD) for the quantitative variables for each of the 2019 and 2020 periods. Chi-square or Fisher's Exact tests were then carried out to compare categorical variables across the two years. The quantitative variables were first analyzed with Shapiro-Wilk's test to check for normal distribution. The student t-test or the non-parametric Mann-Whitney U test were then used to compare the two time periods. Finally, a multi-variate logistic regression model was created including all the variables with $p < 0.05$ in the initial comparison, along with gender and age. Admission during 2020 was designated as the

dependent variable for the logistic regression model. Adjusted odds ratios (OR) were reported along with their 95% confidence intervals. Statistical analysis was performed using Statistical Package for the Social Sciences (SPSS) version 27.

Results

For the three-month period (March 11 to June 11), there were a total of 189 patients that were admitted in 2019 compared to 337 in 2020. First, socio-demographic and clinical characteristics were compared across 2019 and 2020 patients with Pearson's Chi-square test for categorical variables and Mann-Whitney U test for numerical variables. Then, a multiple logistic regression model was created to find correlates of admission in 2020.

Socio-demographics

With regards to socio-demographics, statistical differences between the two years were observed where significantly less percent of patients in 2020 were UAE nationals (25.8% versus 40.7%, $\chi^2=12.57$, $p<0.001$) and were unemployed (43.9% versus 56.1%, $\chi^2=23.63$, $p<0.001$). No statistical differences between the two years were observed for the other socio-demographic factors including age, gender, and being married. With regards to nationality, additional comparisons are presented in the Supplementary Material.

Primary diagnosis

For primary diagnosis, there were significantly more patients during the 2020 time period who were diagnosed with bipolar disorder (24.9% vs. 14.3%, $\chi^2=8.23$, $p=0.004$) and brief psychotic disorder (20.8% vs. 9.5%, $\chi^2=10.97$, $p=0.001$). However, there were significantly less patients in 2020 who were diagnosed with substance-induced disorders (psychosis and mood disorders) (11.3% vs. 23.3%, $\chi^2=13.26$, $p<0.001$) and schizophrenia (12.8% vs. 22.2%,

$\chi^2=8.00$, $p=0.005$). No significant differences were observed for major depressive disorder, schizoaffective disorder, and the category of other conditions. (Table 1)

Table 1: Comparison of psychiatric admissions across 2019 and 2020.

	2019		2020		Test Statistic	p-value
	N	%	N	%		
Total N	189	-	337	-	-	-
Socio-demographics						
Male gender ^a	126	66.7%	207	61.4%	1.433	0.231
Age (years) <i>average / SD</i> ^b	34.8	10.3	33.8	11.0	29370	0.138
UAE National ^a	77	40.7%	87	25.8%	12.570	<0.001*
Married ^a	54	28.6%	113	33.5%	3.215	0.200
Unemployed ^a	106	56.1%	148	43.9%	23.629	<0.001*
Primary diagnosis						
Bipolar Disorder ^a	27	14.3%	84	24.9%	8.234	0.004*
Major Depressive Disorder ^a	14	7.4%	27	8.0%	0.062	0.804
Substance Induced Mood/ Psychotic Disorder ^a	44	23.3%	38	11.3%	13.261	<0.001*
Brief Psychotic Disorder ^a	18	9.5%	70	20.8%	10.996	0.001*
Schizoaffective Disorder ^a	13	6.9%	25	7.4%	0.053	0.818
Schizophrenia ^a	42	22.2%	43	12.8%	8.003	0.005*
Other ^a	31	16.4%	50	14.8%	0.288	0.633
No previous psychiatric history ^a	18	9.5%	122	36.2%	44.240	<0.001*
Length of stay (years) <i>average / SD</i> ^b	22.5	49.9	24.9	33.7	2903	0.078
Referral ^a						
Friend/family/colleague	126	66.7%	187	55.5%	27.342	0.014*

Psychiatric history, length of stay and the type of referral

For the other factors studied, the percent of patients with no psychiatric history was significantly higher in 2020 compared to that in 2019 (36.2% vs. 9.5%, $\chi^2=44.24$, $p<0.001$). No significant difference in the length of stay at the hospital was observed. However, in 2020, less patients were referred from friends/family/colleagues (55.5% vs. 66.7%, $\chi^2=27.34$, $p=0.014$) in comparison to other types of referral. (Table 1)

Looking at all categories of referral in more detail, there was also an overall significant difference ($\chi^2=27.3$, $p<0.001$) where there were more patients in 2020 observed to have been brought in from other facilities (15.7% vs.11.6 %), by sponsors (11.3% vs.4.2 %) and through the police and ambulance (12.5% vs. 4.8%). The decrease from 2019 was as mentioned with regards to those being brought by family, friends or colleagues (55.5% vs.66.7 %) and also patients who had referred themselves (4.5% vs. 11.1%).

Multi-variate logistic regression

Controlling for gender and age, the multi-variate logistic regression showed that being diagnosed with bipolar disorder (OR=1.902, $p=0.028$) and not having a previous psychiatric history (OR=4.255, $p<0.001$) were significantly associated with admission during 2020 (Table 2).

Table 2: Multiple logistic regression for odds of admission during 2020.

Variables		Adjusted Odds Ratio	95% Confidence Interval		p-value
Socio-demographics	Male	1.024	0.666	1.574	0.914
	Age	0.994	0.976	1.013	0.529

	UAE National	1.034	0.651	1.643	0.887
	Unemployed	0.746	0.465	1.198	0.225
Primary diagnosis	Bipolar Disorder	1.902	1.073	3.369	0.028*
	Substance Induced Mood / Psychotic Disorder	0.570	0.302	1.077	0.084
	Brief Psychotic Disorder	1.168	0.559	2.443	0.679
	Schizophrenia	0.768	0.437	1.351	0.359
Previous psychiatric history	No previous psychiatric history	4.255	2.294	7.874	<0.001*
Referral	Friend/Family/Colleague	0.797	0.512	1.239	0.313

Discussion

This is a retrospective study that examined the profile of admissions to a psychiatric hospital during the first months of the pandemic. This profile was then compared to psychiatric admissions during the corresponding months in 2019. To our knowledge, this is the first study of its kind from the UAE.

Results show an overall increase in the number of admissions during the selected three-month period of the pandemic (189 in 2019 versus 337 in 2020). While there could be multiple and complex reasons for this increase, it is hypothesized to be partly due to the healthcare system's response to the pandemic where other facilities were closed for admissions.

A few studies from other countries, however, have reported a different trend for inpatient admissions. Studies from Australia and Spain showed only a slight decrease in hospital psychiatric admissions,^{6, 11} whereas studies from the United Kingdom and Italy reported significant decreases primarily hypothesized to be due to the avoidance of hospitals for fear of contamination.^{7, 8, 9, 10} It is important to also note that countries have had varied responses

to the pandemic and so caution should be applied when interpreting cross-country comparisons of changes in the rates and profiles of psychiatric hospitalizations.

In general, patients who received inpatient treatment in 2020 were comparable in terms of age, gender and marital status to those of 2019. We found an indication for the over-representation of non-local patients during the pandemic, and specifically non-Arab Asian patients. Globally, the pandemic had brought lots of socio-economic stressors and this population group may have been more impacted. Stress related disorders were also higher among the expatriate population from a pre-pandemic study in the UAE.¹⁸ There was also a decrease in the percent of patients who were unemployed, although the significance disappeared in the multi-logistic regression once controlling for other clinical and socio-demographic variables.

With regards to the comparison of the clinical profile of patients admitted in 2020 versus 2019, an interesting finding was the significant increase in the presentation of patients with bipolar disorder and brief psychotic disorder. In the multiple logistic regression model, bipolar disorder remained significant (OR=1.9) showing that regardless of the other characteristics in the model, bipolar disorder was associated with admission in 2020. This trend of an increase in the proportion of inpatients with psychosis or mania during the pandemic (due to the urgency of hospitalization) has also been reported from Australia, the United Kingdom and from Spain.^{6, 7, 8, 11} On the other hand, the decrease in substance-induced conditions could be due to limited accessibility to substances with the restrictions on movement in the country.

Overall, this change in the profile of admissions, however, does not reveal the mental health impact of the pandemic on the population. The psychological burden on the general

population would be best asserted through population-based surveys. Other options are also to study changes in outpatient consultations (including telepsychiatry) and changes in the incidence of conditions across time.

An interesting finding was the increased presentation of patients with no previous psychiatric history. Although the lack of admission to other facilities could have contributed to that, this does not discount the possibility that psycho-social stressors brought by the pandemic may have a role in increasing the incidence of certain conditions.¹⁹ Research studies show that uncertainty is associated with psychiatric symptoms and the pandemic has definitely caused uncertainty, especially during the first months.²⁰ It is also a possibility that some individuals with less resilience had been more susceptible to stress-related disorders with the start of the pandemic.

The following limitations have to be considered while interpreting the findings of this research. First, the study focused on one center and evaluated changes in psychiatric hospitalizations during the early phases of the pandemic. A more longitudinal, multicenter study would provide more insight into the overall impact of the pandemic on the mental healthcare system. Also, it was more practical to concentrate the research study on the main reason for admission (primary diagnosis) without considering other physical or psychiatric comorbidities. Lastly, the changes in hospitalization are attributed to a multiple and complex set of possible reasons (described above). Despite these limitations, this study is unique in evaluating the patterns of psychiatric hospitalization at a specialized psychiatry hospital during the pandemic and our results will be adding to the literature about this topic. The findings of this study will also help the public health sector in planning and designing mental health strategies at the national level in case of similar pandemic situations. This will

hopefully reduce the mental health burden on society and will help build the resilience of both patients and mental health services.

Conclusion

In conclusion, this is the first study to evaluate patterns of hospitalization at a specialized psychiatry hospital during the early phases of the pandemic in the UAE. The results of the multiple logistic regression found that psychiatric admission in the early months of the pandemic was significantly associated with a bipolar disorder diagnosis and with no prior psychiatric history. These findings are attributed to multiple and a complex set of reasons. The results of this study will support in the creation of mental health response strategies in the case of pandemic situations.

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References

1. WHO. About the virus. <https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/novel-coronavirus-2019-ncov>. Accessed 17 Oct 2021.
2. WHO. Mental health and COVID-19. <https://www.who.int/teams/mental-health-and-substance-use/mental-health-and-covid-19>. Accessed 17 Oct 2021.

3. Luo M, Guo L, Yu M, Jiang W, Wang H. The psychological and mental impact of coronavirus disease 2019 (COVID-19) on medical staff and general public: A systematic review and meta-analysis. *Psychiatry Res* 2020; 291:113190.
4. Dong F, Liu HL, Dai N, Yang M, Liu JP. A living systematic review of the psychological problems in people suffering from COVID-19. *J Affect Disord* 2021; 1;292:172-188.
5. Rogers JP, Chesney E, Oliver D, Pollak TA, McGuire P, et al. Psychiatric and neuropsychiatric presentations associated with severe coronavirus infections: a systematic review and meta-analysis with comparison to the COVID-19 pandemic. *Lancet Psychiatry* 2020; 7(7):611-627.
6. Parra A, Juanes A, Losada CP, Álvarez-Sesmero S, Santana VD, Marti I et al. Psychotic symptoms in COVID-19 patients. A retrospective descriptive study. *Psychiatr Res* 2020; 291:113254.
7. Abbas MJ, Kronenberg G, McBride M, Chari D, Alam F, Mukaetova-Landiska E et al. The early impact of the COVID-19 pandemic on acute care mental health services. *Psychiatr Serv* 2020; 1:72(3):242-246.
8. Butler M, Delvi A, Mujic F, Broad S, Pauli L, Pollak T et al. Reduced activity in an inpatient liaison psychiatry service during the first wave of the COVID-19 pandemic: comparison with 2019 data and characterization of the SARS-CoV-2 positive cohort. *Front Psychiatry* 2021; 12:619550.
9. Tromans S, Chester V, Harrison H, Pankhania P, Booth H, Chakraborty N. Patterns of use of secondary mental health services before and during COVID-19 lockdown: observational study. *BJPsych Open* 2020; 6(6):e117.

10. Clerici M, Durbano F, Spinogatti F, Vita A, De Girolamo G, Micciolo R. Psychiatric hospitalization rates in Italy before and during COVID-19: did they change? An analysis of register data. *Ir J Psychol Med* 2020; 37(4):283-290.
11. Jagadheesan K, Danivas V, Itrat Q, Sekharan L, Lakra APV. COVID-19 and psychiatric admissions: An observational study of the first six months of lockdown in Melbourne. *Psychiatry Res* 2021; 300:113902.
12. The Official Portal of the UAE Government Fact Sheet. <https://u.ae/en/about-the-uae/fact-sheet>. Accessed 17 Oct 2021.
13. The National News. Coronavirus: UAE records first case. <https://www.thenationalnews.com/uae/health/coronavirus-uae-records-first-case-1.971253>. Accessed 17 Oct 2021.
14. Al Arabiyah English. Coronavirus: UAE lifts curfew, ends national COVID-19 sanitation drive. <https://english.alarabiya.net/coronavirus/2020/06/24/Coronavirus-UAE-ends-national-sterilization-program-starting-June-24>. Accessed 17 Oct 2021.
15. Al Awaidy ST, Khamis F, Al Attar F, Razzaq NA, Al Dabal L, Al Enani M, Alfouzan W, Al Maslamani M, Al Romaihi H, Al Salman J, Altawalah H, Langrial SU, Al Ariqi L, Mohamed O. COVID-19 in the Gulf Cooperation Council Member States: An Evidence of Effective Response. *Oman Med J*. 2021 Sep 14;36(5):e300. doi: 10.5001/omj.2021.115. PMID: 34552762; PMCID: PMC8441050.
16. UAE Ministry of Health & Prevention. Continuation of National Disinfection Programme, new plans developed to accommodate each emirate's requirements. <https://www.mohap.gov.ae/en/MediaCenter/News/Pages/2358.aspx>. Accessed 17 Oct 2021.

17. Global Media Insight. United Arab Emirates Population Statistics 2021. <https://www.globalmediainsight.com/blog/uae-population-statistics/>. Accessed 17 Oct 2021.
18. Abdel Aziz K, Aly El-Gabry D, Al-Sabousi M, Al-Hassani G, Ragheb MM, Elamin ME et al. Pattern of psychiatric inpatient admissions in Al Ain, United Arab Emirates. *BJPsych International* 2020; 18(2): 46-50.
19. Brown E, Gray R, Lo Monaco S, O'Donoghue B, Nelson B, Thomson A et al. The potential impact of COVID-19 on psychosis: A rapid review of contemporary epidemic and pandemic research. *Schizophr Res* 2020; 222:79-87.
20. Massazza A, Kienzler H, Al-Mitwalli S, Tamimi N, Giacaman R. The association between uncertainty and mental health: a scoping review of the quantitative literature. *J Ment Health*. 2022; 11:1-12. doi: 10.1080/09638237.2021.2022620.

Supplementary Material

Table (I): Psychiatric admissions in 2019 vs. 2020 and nationality groups:

		Americas /Europe	Africa	Asia (not Arab)	Arab (not GCC)	Arab (GCC)	Total
Year of 2019 Admission	N	6	10	39	56	78	189
	% within 2019	3.2%	5.3%	20.6%	29.6%	41.3%	
2020	N	8	49	130	58	92	337
	% within 2020	2.4%	14.5%	38.6%	17.2%	27.3%	

$$\chi^2=37.6, p<0.001$$