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Table S1 Association of patient characteristics with 28-day mortality among patients with psychiatric disorders hospitalized with COVID-19 (N=3,768)

	Full sample (N=3,768)	With the outcome (N=842)	Without the outcome (N=2,926)	Crude logistic regression model	Multivariable logistic regression model	
	N (%)	N (%)	N (%)	OR (95%CI)	AOR (95%CI)	Collinearity diagnosis
Sex						1.09
Female	1,858 (49.3)	379 (45.0)	1,479 (50.5)	Ref.	Ref.	
Male	1,910 (50.7)	463 (55.0)	1,447 (49.5)	1.25 (1.07-1.46; 0.005)*	1.72 (1.46-2.03; <0.001)*	
Age						1.10
18 to 50	400 (10.6)	15 (1.78)	385 (13.2)	Ref.	Ref.	
51 to 70	913 (24.2)	119 (14.1)	794 (27.1)	3.85 (2.29-6.94; <0.001)*	3.31 (1.96-5.99; <0.001)*	
71 to 80	780 (20.7)	191 (22.7)	589 (20.1)	8.32 (5.01-14.9; <0.001)*	7.42 (4.44-13.33; <0.001)*	
> 80	1,675 (44.5)	517 (61.4)	1,158 (39.6)	11.46 (7.02-20.25; <0.001)*	11.3 (6.86-20.10; <0.001)*	
Number of medical conditions†						1.01
≤ 7	1,038 (27.5)	141 (16.7)	897 (30.7)	Ref.	Ref.	
8-10	853 (22.6)	187 (22.2)	666 (22.8)	1.79 (1.41-2.27; <0.001)*	1.53 (1.20-1.97; 0.001)*	
11-14	953 (25.3)	238 (28.3)	715 (24.4)	2.12 (1.68-2.67; <0.001)*	1.67 (1.32-2.13; <0.001)*	
≥ 15	924 (24.5)	276 (32.8)	648 (22.1)	2.71 (2.16-3.41; <0.001)*	2.07 (1.64-2.62; <0.001)*	

AOR = adjusted odds ratio; OR = odds ratio.
† Number of medical conditions based in the sum of second-level ICD-10 codes.
* Two-sided p-value < 0.05.

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Table S2 Association of patient characteristics with 28-day mortality among patients with psychiatric disorders hospitalized with COVID-19 (N=3,768)

	Full sample (N=3,768)	With the outcome (N=842)	Without the outcome (N=2,926)	Crude logistic regression model	Multivariable logistic regression model	
	N (%)	N (%)	N (%)	OR (95%CI)	AOR (95%CI)	Collinearity diagnosis (GVIF)
Sex						1.10
Female	1,858 (49.3)	379 (45.0)	1,479 (50.5)	Ref.	Ref.	
Male	1,910 (50.7)	463 (55.0)	1,447 (49.5)	1.25 (1.07-1.46; 0.005)*	1.69 (1.43 – 2.00; <0.001)*	
Age						1.11
18 to 50	400 (10.6)	15 (1.78)	385 (13.2)	Ref.	Ref.	
51 to 70	913 (24.2)	119 (14.1)	794 (27.1)	3.85 (2.29-6.94; <0.001)*	3.70 (2.20-6.70; <0.001)*	
71 to 80	780 (20.7)	191 (22.7)	589 (20.1)	8.32 (5.01-14.9; <0.001)*	8.14 (4.87-14.63; <0.001)*	
> 80	1,675 (44.5)	517 (61.4)	1,158 (39.6)	11.46 (7.02-20.25; <0.001)*	12.47 (7.56-22.23; <0.001)*	
Weighted Elixhauser comorbidity index†						1.05
≤ 0	1,434 (38.1)	242 (28.7)	1,192 (40.7)	Ref.	Ref.	
(0, 5)	535 (14.2)	108 (12.8)	427 (14.6)	1.25 (0.97-1.60; 0.088)	0.99 (0.76-1.28; 0.927)	
(5, 14)	927 (24.6)	220 (26.1)	707 (24.2)	1.53 (1.25-1.88; <0.001)*	1.06 (0.86-1.32; 0.582)	
> 14	872 (23.1)	272 (32.3)	600 (20.5)	2.23 (1.83-2.73; <0.001)*	1.56 (1.26-1.92; <0.001)*	

AOR = adjusted odds ratio; OR = odds ratio.
† Weighted Elixhauser comorbidity index.[25]
* Two-sided p-value < 0.05.

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Table S3 Top five models according to average silhouette coefficient

Number of neighbors	Minimum embedding distance	Clustering method	Number of clusters	Average silhouette coefficient
100	**0.1**	**Centroid**	**5**	**0.809**
100	0.1	Average	5	0.809
100	0.1	Complete	5	0.809
100	0.5	Average	5	0.784
100	0.5	Centroid	5	0.784

Bold type denotes the model with the highest average silhouette coefficient.

Table S4 Distribution of patient characteristics within each cluster

	Cluster 1 (N = 585)	Cluster 2 (N = 1,999)	Cluster 3 (N=694)	Cluster 4 (N=405)	Cluster 5 (N=85)
	N (%)	N (%)	N (%)	N (%)	N (%)
Sex					
Female	300 (51.3)	1,135 (56.8)	146 (21.0)	243 (60.0)	34 (40.0)
Male	285 (48.7)	864 (43.2)	548 (79.0)	162 (40.0)	51 (60.0)
Age					
18 to 50	125 (21.4)	27 (1.35)	160 (23.1)	55 (13.6)	33 (38.8)
51 to 70	210 (35.9)	194 (9.7)	345 (49.7)	129 (31.9)	35 (41.2)
71 to 80	121 (20.7)	424 (21.2)	130 (18.7)	95 (23.5)	10 (11.8)
> 80	129 (22.1)	1,354 (67.7)	59 (8.5)	126 (31.1)	7 (8.2)
Number of medical conditions					
≤ 7	206 (35.2)	445 (22.3)	190 (27.4)	146 (36.0)	51 (60.0)
8-10	126 (21.5)	465 (23.3)	158 (22.8)	81 (20.0)	23 (27.1)
11-14	134 (22.9)	538 (26.9)	181 (26.1)	91 (22.5)	9 (10.6)
≥ 15	119 (20.3)	551 (27.6)	165 (23.8)	87 (21.5)	2 (2.4)
Elixhauser comorbidity index†					
≤ 1	295 (50.4)	547 (27.4)	339 (48.8)	207 (51.1)	46 (54.1)
(1, 3)	95 (16.2)	281 (14.1)	89 (12.8)	56 (13.8)	14 (16.5)
(3, 4)	91 (15.6)	618 (30.9)	118 (17.0)	82 (20.2)	18 (21.2)
> 4	104 (17.8)	553 (27.7)	148 (21.3)	60 (14.8)	7 (8.2)

† Computed with the Swiss weights modification by Sharma et al.[25]

Table S5 Pairwise comparison of the prevalence of psychotropic medications in each cluster

	Cluster A	%	Cluster B	%	χ^2 (p-value)
Antidepressants	Cluster 1	14.7	Cluster 2	19.2	5.88 (0.015)*
			Cluster 3	7.2	17.99 (<0.001)**
			Cluster 4	27.9	25.15 (<0.001)**
			Cluster 5	8.2	2.08 (0.149)
	Cluster 2	19.2	Cluster 3	7.2	54.04 (<0.001)**
			Cluster 4	27.9	14.99 (<0.001)**
			Cluster 5	8.2	5.74 (0.017)*
	Cluster 3	7.2	Cluster 4	27.9	85.10 (<0.001)**
			Cluster 5	8.2	0.02 (0.901)
	Cluster 4	27.9	Cluster 5	8.2	13.65 (<0.001)**
Antipsychotics	Cluster 1	21.7	Cluster 2	13.1	25.90 (<0.001)**
			Cluster 3	5.5	73.00 (<0.001)**
			Cluster 4	16.8	3.36 (0.067)
			Cluster 5	16.5	0.93 (0.335)
	Cluster 2	13.1	Cluster 3	5.5	29.20 (<0.001)**
			Cluster 4	16.8	3.66 (0.056)
			Cluster 5	16.5	0.56 (0.455)
	Cluster 3	5.5	Cluster 4	16.8	36.30 (<0.001)**
			Cluster 5	16.5	13.00 (<0.001)**
	Cluster 4	16.8	Cluster 5	16.5	<0.01 (>0.99)
Benzodiazepines or Z-drugs	Cluster 1	34.7	Cluster 2	36.7	0.71 (0.399)
			Cluster 3	20.9	29.83 (<0.001)**
			Cluster 4	33.3	0.14 (0.705)
			Cluster 5	27.1	1.61 (0.204)
	Cluster 2	36.7	Cluster 3	20.9	57.96 (<0.001)**
			Cluster 4	33.3	1.53 (0.216)
			Cluster 5	27.1	2.89 (0.089)
	Cluster 3	20.9	Cluster 4	33.3	20.20 (<0.001)**
			Cluster 5	27.1	1.36 (0.244)
	Cluster 4	33.3	Cluster 5	27.1	0.99 (0.319)
Mood stabilizers	Cluster 1	8.2	Cluster 2	6.5	1.79 (0.181)
			Cluster 3	4.9	5.24 (0.022)*
			Cluster 4	15.1	10.79 (0.001)**
			Cluster 5	14.1	2.49 (0.114)
	Cluster 2	6.5	Cluster 3	4.9	2.05 (0.153)
			Cluster 4	15.1	32.57 (<0.001)**
			Cluster 5	14.1	6.29 (0.012)*
	Cluster 3	4.9	Cluster 4	15.1	32.17 (<0.001)**
			Cluster 5	14.1	9.98 (0.002)**
	Cluster 4	15.1	Cluster 5	14.1	<0.01 (0.956)
FIASMA psychotropic medications	Cluster 1	12.1	Cluster 2	10.8	0.68 (0.408)
			Cluster 3	5.3	18.15 (<0.001)**
			Cluster 4	19.0	8.37 (0.004)**
			Cluster 5	7.1	1.42 (0.234)
	Cluster 2	10.8	Cluster 3	5.3	17.50 (<0.001)**
			Cluster 4	19.0	20.43 (<0.001)**
			Cluster 5	7.1	0.84 (0.359)
	Cluster 3	5.3	Cluster 4	19.0	50.03 (<0.001)**
			Cluster 5	7.1	0.17 (0.684)
	Cluster 4	19.0	Cluster 5	7.1	6.31 (0.012)*

* $p < 0.05$.
** $p < 0.005$ (Bonferroni correction: 0.05/10).