



2023

Section: Psychiatry

## Prevalence of Post Covid Psychiatric Symptoms in Sample of Recovered Patients

Reda Roshdy Mahmoud Mohammed

*Psychiatry Department, Faculty of Medicine, Al-Azhar University, Cairo, Egypt.*

Mohamed Elsayed Elmetwalli Elsayed Elbasyouni

*Psychiatry Department, Faculty of Medicine, Al-Azhar University, Cairo, Egypt., dr7463@gmail.com*

Mohammed Mahmoud Abdalrahman Hamouda

*Psychiatry Department, Faculty of Medicine, Al-Azhar University, Cairo, Egypt.*

Ismail Sayed Mohamed Sadek

*Psychiatry Department, Faculty of Medicine, Al-Azhar University, Cairo, Egypt.*

Follow this and additional works at: <https://aimj.researchcommons.org/journal>



Part of the [Medical Sciences Commons](#), [Obstetrics and Gynecology Commons](#), and the [Surgery Commons](#)

### How to Cite This Article

Mohammed, Reda Roshdy Mahmoud; Elbasyouni, Mohamed Elsayed Elmetwalli Elsayed; Hamouda, Mohammed Mahmoud Abdalrahman; and Sadek, Ismail Sayed Mohamed (2023) "Prevalence of Post Covid Psychiatric Symptoms in Sample of Recovered Patients," *Al-Azhar International Medical Journal*. Vol. 4: Iss. 6, Article 16.

DOI: <https://doi.org/10.58675/2682-339X.1856>

This Original Article is brought to you for free and open access by Al-Azhar International Medical Journal. It has been accepted for inclusion in Al-Azhar International Medical Journal by an authorized editor of Al-Azhar International Medical Journal. For more information, please contact [dryasserhelmy@gmail.com](mailto:dryasserhelmy@gmail.com).

# Prevalence of Post Covid Psychiatric Symptoms in Sample of Recovered Patients

Mohamed Elsayed Elmetwalli Elsayed Elbasyouni\*, Reda Roshdy Mahmoud Mohammed, Mohammed Mahmoud Abdalrahman Hamouda, Ismail Sayed Sadek

Psychiatry Department, Faculty of Medicine, Al-Azhar University, Cairo, Egypt

## Abstract

**Background:** Coronavirus disease (COVID-19) is a new strain that was never recognized in humans before. It was discovered in 2019 and its common signs include fever, respiratory symptoms; cough and dyspnea.

**Aim of the work:** To investigate whether there are any psychiatric symptoms in patient who got COVID-19 infection or not.

**Subjects and methods:** This case control involved 132 subjects divided into a case group of 66 patients who were treated in tertiary care at Al-Hussein and Sayed Galal Hospitals, Al-Azhar University and a control group of another 66 patients who did not get the infection. The Symptom Checklist 90 Revised (SCL-90-R) and clinical interview have been used to evaluate subjects within 6 months of discharge from quarantine sections.

**Results:** The results of this study showed that subjects of the case group had significant levels of somatization, depression and anxiety based on SCL-90R, while clinical interview showed significant increase of major depressive episodes, persistent depressive disorder, generalized anxiety disorder and insomnia.

**Conclusion:** A wide spectrum of psychiatric symptoms occur in COVID-19 patients. Based on SCL-90-R data from COVID-19 survivors, psychiatric symptoms may exist within 6 months following discharge; Somatization, Depression and Anxiety were significantly higher in post-COVID-19 patients. Based on the clinical interview, various disorders occur to COVID-19 survivors including Major depressive episode, Persistent depressive disorder, Generalized anxiety disorder and Insomnia.

**Keywords:** Anxiety, COVID-19, Depression, Psychiatry, Respiratory distress

## 1. Introduction

COVID-19 is a highly infectious disease; possibly one person can infect three persons.<sup>1</sup> The incubation period is about 3–9 days.<sup>2</sup> It is presented by respiratory virus-like manifestation; >80% of patients have a mild to severe self-limiting infection.<sup>3</sup> Common symptoms are: fever 81.2%, cough 58.5%, fatigue 38.5%, dyspnea 26.1%, and sputum 25.8%.<sup>4</sup>

Post-COVID-19 is defined as a condition that occurs three months after infection, with symptoms continue 2 months and cannot be explained by other diagnoses. Common symptoms include dyspnea, fatigue and cognitive dysfunction which may cause functional impairment. Symptoms may fluctuate or flare by time.<sup>5</sup>

SARS-CoV-2 affects various systems; respiratory, renal, cardiovascular and nervous.<sup>6</sup> There are different mechanisms by which CNS is affected by COVID-19 infection: hypoxia, direct infection and immune-mediated cell destruction.<sup>7</sup> Increased cases of COVID-19, lead to increase awareness of the mental health consequences.<sup>8</sup> It is reported that the acute psychiatric symptoms of COVID-19 are depression, anxiety, and stress.<sup>9</sup> Long-term psychiatric symptoms are not known yet, few studies found that symptoms can persist 3 months, 5 months, 6 months, and even up to year.<sup>10</sup>

The purpose of this research was to see if there are certain psychiatric symptoms or disorders associated with post-COVID-19 within 6 months of hospital discharge.

Accepted 20 December 2022.  
Available online 5 September 2023

\* Corresponding author. Psychiatry Department, Faculty of Medicine, Al-Azhar University, Cairo, Egypt.  
E-mail address: [dr7463@gmail.com](mailto:dr7463@gmail.com) (M.E.E.E. Elbasyouni).

<https://doi.org/10.58675/2682-339X.1856>

2682-339X/© 2023 The author. Published by Al-Azhar University, Faculty of Medicine. This is an open access article under the CC BY-SA 4.0 license (<https://creativecommons.org/licenses/by-sa/4.0/>).

## 2. Patients and methods

This study has been conducted in tertiary care units at Al-Hussein and Sayed Galal Hospitals, Al-Azhar University, on a total of 132 patients, divided into 66 patients as a case group and 66 patients as a control group.

### 2.1. Eligibility criteria

Patients between the age of 18 and 60 of both sexes who accepted of participation in this study by obtaining written consent. Subjects of case group have been diagnosed as COVID-19 infection based on the clinical presentation, laboratory testing, chest imaging and rt-PCR tests within last 6 months. While subjects of the control group did not have history of COVID-19 infection or sever flu-like symptoms that acquired home stay or hospital admission. We excluded patients with history of organic neurological disorders like intracranial hemorrhage (ICH), ischemic infarctions, brain tumors, vascular malformations, brain surgery and infections. We also excluded individuals who had previous history of psychiatric disorders or received antidepressants or antipsychotics.

### 2.2. Methods and data collection

Participants have been divided into 2 equal groups: one study (case) group and another control group. A case group composed of sixty-six patients (33 males and 33 females, 22 single and 44 married) with a mean age 40.3. There were 43 patients working at areas of high degree of physical contact such as health care facilities, education, childcare, food and necessary goods. 23 subjects of case group lived in urban areas, 12 subjects in rural areas, and 30 subjects in slums. Eight subjects of case group lived in places with crowding index  $<1/\text{room}$ , 17 subjects lived in places with crowding index  $1-1.5/\text{room}$  and 14 subjects lived in places with crowding index  $>1.5/\text{room}$ .

A control group composed of sixty-six patients (33 males and 33 females, 21 single and 45 married) with mean age 39.8. There were 14 patients working at areas of the high degree of physical contact. 29 subjects of control group lived in urban areas, 30 subjects in rural areas, and 7 subjects in slums. 23 subjects of the control group lived in places with crowding index  $<1/\text{room}$ , 28 subjects lived in places with crowding index  $1-1.5/\text{room}$  and 15 subjects lived in places with crowding index  $>1.5/\text{room}$ .

### 2.3. Tools and assessment

All patients were subjected to Symptom Checklist 90 Revised (SCL-90R) questionnaire, SCID-I questionnaire and clinically interviewed including full general psychiatric history taking; personal history: name, age, sex, marital status, educational level, residence, occupation, and particular habits of medical significance; complaint: onset, course, and duration; history of the present illness, past medical and psychiatric history; and family history mental state examinations regarding DSM-V criteria.<sup>11</sup> Full medical history taking and general physical examinations were done.

### 2.4. Ethical approval

The research was accepted by our faculty's ethical committee and participants gave written consent.

### 2.5. Statistical analysis of the data

Data were analyzed using Statistical Program for Social Science (SPSS) version 24. Qualitative data were expressed as frequency and percentage. Quantitative data were expressed as mean  $\pm$  SD. **Mean (average):** the central value of a discrete set of numbers, specifically the sum of values divided by the number of values. **Standard deviation (SD):** is the measure of dispersion of a set of values. A high SD indicate that the values are spread out over a wider range, while a low SD indicates that the values tend to be close to the mean of the set.

The following tests were done: **Chi-square test:** was used when comparing between non-parametric data. **Mann Whitney U test (MW):** when comparing between two means (for abnormally distributed data). **Probability (P-value):**  $P$  value  $> 0.05$  was considered insignificant,  $P$ -value  $<0.05$  was considered significant and  $P$  value  $< 0.001$  was considered as highly significant.

## 3. Results

There were 66 (50%) men and 66 (50%) women among the 132 patients studied, with an average age of 40.3 years in the case group and 39.8 years in the control group (Table 1). There was no significant difference between case group and control group as regard age, sex, marital status and educational level (Table 1).

Highly statistically significant difference of residence and crowding index when comparing case group to control group (Table 1).

Table 1. Comparison of demographic data between studied groups shows no statistically significant difference as regard age, sex, marital status and educational level. While highly statistically significant increased percentage of working at areas of high degree of physical contact in case group and highly statistically significant difference of residence and crowding index in case group.

		Subject (N = 66)	Control (N = 66)	Stat. test	P value
Age (years)	Mean	40.3	39.8	MW = 120	0.872 NS
	±SD	9.1	10.9		
Sex	Male	33 (50%)	33 (50%)	$\chi^2 = 0.0$	1.0 NS
	Female	33 (50%)	33 (50%)		
Marital status	Single	22 (33.3%)	21 (31.8%)	$\chi^2 = 0.03$	0.852 NS
	Married	44 (66.7%)	45 (68.2%)		
Occupation	High degree of physical contact	43 (65.2%)	10 (15.2%)	$\chi^2=34.3$	<0.001 HS
Educational level	Secondary school	16 (24.2%)	25 (37.9%)	$\chi^2 = 2.86$	0.905 NS
	University	50 (75.8%)	41 (62.1%)		
Residence	Urban areas	23 (34.8%)	29 (43.9%)	$\chi^2=22.6$	<0.001 HS
	Rural areas	12 (18.2%)	30 (45.5%)		
	Slums	30 (45.5%)	7 (10.6%)		
Crowding index	<1/room	8 (12.1%)	23 (34.8%)	$\chi^2=22.01$	<0.001 HS
	1–1.5/room	17 (25.8%)	28 (42.4%)		
	>1.5/room	41 (62.1%)	15 (22.7%)		

Highly statistically significant increased percentage of working at areas of the high degree of physical contact in case group (43 patients, 65.2%) when compared with control group (10 patients, 15.2%) (Table 1). These areas include healthcare facilities, education, childcare, food and necessary goods.

There was no statistically significant difference between studied groups (case and control) as regard Symptom Check List 90 Revised (SCL-90-R) (interpersonal sensibility, obsessive-compulsive, anger hostility, phobic anxiety, paranoid ideation and psychoticism) (Table 2).

Based on SCL-90-R, there was highly statistically significant increased percentage of somatization in case group (38 patients, 57.6%) when compared with the control group (18 patients, 27.3%), statistically significant increased percentage of depression in case group (38 patients, 57.6%) when compared with control group (22 patients, 33.3%) and highly statistically significant increased percentage of anxiety

in case group (47 patients, 71.2%) when compared with control group (16 patients, 24.2%) (Table 2).

As regard clinical interview, there was statistically significant increased percentage of major depressive episode in case group (19 patients, 28.8%) when compared with the control group (5 patients, 7.6%), statistically significant increased percentage of Persistent depressive disorder in case group (10 patients, 15.2%) when compared with the control group (0 patients, 0%) (Table 3).

Also, there was highly statistically significant increased percentage of generalized anxiety disorder in the case group (27 patients, 40.9%) when compared with the control group (5 patients, 7.6%) and highly statistically significant increased percentage of insomnia in case group (11 patients, 16.7%) when compared with the control group (0 patients, 0%) (Table 3).

Table 2. Comparison of Symptom Check List 90 Revised (SCL-90-R) between studied groups shows highly statistically significant increased percentage of somatization and anxiety in case group and statistically significant increased percentage of depression in case group.

	Case (N = 66)	Control (N = 66)	$\chi^2$	P value
Somatization	38 (57.6%)	18 (27.3%)	12.4	<0.001 HS
Obsessive compulsive	30 (45.5%)	22 (33.3%)	2.03	0.154 NS
Interpersonal sensibility	10 (15.2%)	18 (27.3%)	2.9	0.088 NS
Depression	38 (57.6%)	22 (33.3%)	7.8	0.005 S
Anxiety	47 (71.2%)	16 (24.2%)	29.2	<0.001 HS
Anger Hostility	9 (13.6%)	12 (18.2%)	0.5	0.475 NS
Phobic anxiety	26 (39.4%)	16 (24.2%)	3.4	0.061 NS
Paranoid ideation	15 (22.7%)	12 (18.2%)	0.41	0.517 NS
Psychoticism	16 (24.2%)	18 (27.3%)	0.15	0.690 NS

Table 3. Comparison of clinical interview between studied groups shows statistically significant increased percentage of major depressive episode and persistent depressive disorder in case group and highly statistically significant increased percentage of generalized anxiety disorder and insomnia.

	Case (N = 66)	Control (N = 66)	$\chi^2$	P value
Major depressive episode	19 (28.8%)	5 (7.6%)	9.9	0.001 S
Manic or Hypomanic episode	2 (3%)	0 (0%)	2.03	0.154 NS
Persistent depressive disorder	10 (15.2%)	0 (0%)	10.8	0.001 S
Panic disorder	5 (7.6%)	2 (3%)	1.35	0.243 NS
OCD	4 (6.1%)	1 (1.5%)	1.87	0.171 NS
PTSD	5 (7.6%)	2 (3%)	1.35	0.243 NS
Generalized anxiety disorder	27 (40.9%)	5 (7.6%)	19.9	<0.001 HS
Insomnia	11 (16.7%)	0 (0%)	12	<0.001 HS
Psychosis spectrum	3 (4.5%)	0 (0%)	3.06	0.079 NS

As regard clinical interview, there was no statistically significant difference between studied groups (case and control) as regard manic or hypomanic episode. Panic disorder, OCD, PTSD and psychosis spectrum (Table 3).

#### 4. Discussion

The age, sex, marital status and educational level in case and control groups did not differ significantly in this study.

In agreement with our study, a systematic review and meta-analysis reported that there were no significant association between neuropsychiatric or psychiatric symptoms in covid-19 with age and sex.<sup>12</sup> Also, Xiong *et al.*, 2021 reported that no significant difference as regard the sex ratio and age between the two groups.<sup>13</sup>

The current study showed highly statistically significant increased percentage of working at areas of the high degree of physical contact. These areas include healthcare facilities, education, childcare, food and necessary goods.

Such results are congruent to American study which revealed that healthcare workers and healthcare support occupations have a greater risk of exposure one per month more than 90%, and more than 75% more than 1/week. Other occupational groups such as transportation security screeners, childcare workers, nannies, firefighters, police officers, and personal care aides have a high risk of exposure (52% once a month). While community and social services occupations are 32.4% exposed more than once a month.<sup>14</sup> Additionally, these occupations had a high risk of severe COVID-19 infection.<sup>15</sup>

Comparison of Symptom Check List 90 Revised (SCL-90-R) between studied groups, showed that there was highly statistically significant increased percentage of somatization and anxiety and statistically significant increased percentage of depression in the case group. The present study was supported by Mullins *et al.*, 2022 results which reported strong positive correlations between somatization and somatic symptoms and SARS-Cov-2.<sup>16</sup>

Another study by Ibrahim *et al.*, 2022 used SCL-90-R and reported that COVID-19 can induce various symptoms and levels of psychological distress. Their results showed that 50% of COVID-19 survivors had severe depression and most of them had problematic level of anxiety as 40% had moderate anxiety and 38% had severe anxiety. Regarding other symptoms, moderate somatization symptoms was 50% and moderate obsessive-compulsive symptoms was 50%. While 36% of

patients had severe interpersonal sensitivity and 40% of the patients had severe level of hostility.<sup>17</sup>

This result congruent with Xie *et al.*, 2021 who found that all ten SCL-90-R- dimensions were expressed on COVID-19 patients from mild to moderate severity through early recovery and concluded that under the stress of respiratory syndrome, the survivors are easy to get psychological distress.<sup>18</sup>

A recent systemic review and meta-analysis found that 10.5% of COVID-19 survivors suffered from depression, 12.1% had insomnia, while anxiety was 12.3%, memory impairment 18.9%, fatigue was 19.3%, and irritability 12.8% after acute stage.<sup>12</sup> In addition, the risk of depression was more than 3-times higher than healthy control.<sup>19</sup>

Assessment of long-term consequences of COVID-19 found that survivors were mostly bothered by tiredness, depression, sleep troubles and anxiety at 6 months after infection.<sup>20</sup>

Restrictions on personal movement, self-isolating and self-quarantining, school closing, restrictions on public events and public transport, workplace closing, restrictions on international travel social distancing and closing borders are great challenges to public health and economic impact of these strategies was stressful to individual's income which affect mental health. Additionally, media reports during the COVID-19 outbreak was terrifying, excessive follow-up of infection and death numbers and the spread of fearsome sequelae of infection lead to rumors spread among the population which may contribute to the net result of increased psychological problems.

Furthermore, in the current study comparison of clinical interview between studied groups, showed that there was statistically significant increased percentage of major depressive episode and persistent depressive disorder in case group when compared with control group. Highly statistically significant increased percentage of generalized anxiety disorder and insomnia in case group.

In agreement with our study, the incidence of depression, anxiety, insomnia and dysphoria among COVID-19 survivors was significantly higher in comparison to healthy controls.<sup>13</sup> Additionally, the prevalence of mental disorders including stress-related disorders, mood disorders, anxiety, and affective psychotic disorders were higher in the COVID-19 group than in the control group.<sup>21</sup>

Furthermore, about 33% of studied COVID-19 survivors had psychological problems and the most common psychological problem was depression.<sup>17</sup>

Some other published studies found that at one month after infection, 55.7% of participants had  $\geq 1$

psychopathological (anxiety, depression, OCD and PTSD), while after 2 months 36.8% showed  $\geq 1$  psychopathological domain, 20.6% in three months, and 10% in fourth month.<sup>22</sup>

Attribution to the current result may be related to psychological distress, fears of unknown, and fear for future COVID-19 attack and experience again isolation from family and friends, loss of liberty, uncertainty about the disease's progression, and a sense of powerlessness. Additionally, some psychosocial issues postdischarge, such as stigma associated with COVID-19 and income reduction or unemployment, may raise the likelihood of mental health problems among COVID-19 survivors.

These findings recommend psychological support and intensive mental health service throughout the early stages of COVID-19. Additionally, it is necessary to monitor psychiatric symptoms and provide medication (if needed) for survivors throughout recovery.

## 5. Conclusion

Based on SCL-90-R, somatization, depression and anxiety were significantly high in control group. Clinical interview revealed that various disorders occur to COVID-19 survivors including Major depressive episode, Persistent depressive disorder, Generalized anxiety disorder and Insomnia. These findings suggest that it is necessary to monitor psychiatric symptoms and help survivors by treatment if needed.

## Disclosure

The authors have no financial interest to declare in relation to the content of this article.

## Authorship

All authors have a substantial contribution to the article.

## Sources of funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## Conflicts of interest

The authors declared that there were NO conflicts of Interest.

## References

- Alimohamadi Y, Taghdir M, Sepandi M. Estimate of the basic reproduction number for COVID-19: a systematic review and meta-analysis. *J Prev Med Public Health*. 2020;53:151–157. <https://doi.org/10.3961/jpmph.20.076>.
- Guan WJ, Ni ZY, Hu Y, et al. Clinical characteristics of coronavirus disease 2019 in China. *N Engl J Med*. 2020;382:1708–1720. <https://doi.org/10.1056/NEJMoa2002032>.
- Gillett G, Jordan I. Severe psychiatric disturbance and attempted suicide in a patient with COVID-19 and no psychiatric history. *BMJ Case Rep*. 2020;13, e239191. <https://doi.org/10.1136/bcr-2020-239191>.
- Alimohamadi Y, Sepandi M, Taghdir M, Hosamirudsari H. Determine the most common clinical symptoms in COVID-19 patients: a systematic review and meta-analysis. *J Prev Med Hyg*. 2020;61:E304–E312. <https://doi.org/10.15167/2421-4248/jpmh2020.61.3.1530>. Published 2020 Oct 6.
- Soriano JB, Murthy S, Marshall JC, Relan P, Diaz JV. A clinical case definition of post-COVID-19 condition by a Delphi consensus. *Lancet Infect Dis*. 2022;22:e102–e107. [https://doi.org/10.1016/S1473-3099\(21\)00703-9](https://doi.org/10.1016/S1473-3099(21)00703-9).
- Ornell F, Halpern SC, Kessler FHP, Narvaez JCM. The impact of the COVID-19 pandemic on the mental health of health-care professionals. *Cad Saude Pública*. 2020;36, e00063520. <https://doi.org/10.1590/0102-311X00063520>. Published 2020 Apr 30.
- Tu H, Tu S, Gao S, Shao A, Sheng J. Current epidemiological and clinical features of COVID-19; a global perspective from China. *J Infect*. 2020;81:1–9. <https://doi.org/10.1016/j.jinf.2020.04.011>.
- Taquet M, Luciano S, Geddes JR, Harrison PJ. Bidirectional associations between COVID-19 and psychiatric disorder: retrospective cohort studies of 62 354 COVID-19 cases in the USA. *Lancet Psychiatr*. 2021;8:130–140. [https://doi.org/10.1016/S2215-0366\(20\)30462-4](https://doi.org/10.1016/S2215-0366(20)30462-4).
- Schou TM, Joca S, Wegener G, Bay-Richter C. Psychiatric and neuropsychiatric sequelae of COVID-19 - a systematic review. *Brain Behav Immun*. 2021;97:328–348. <https://doi.org/10.1016/j.bbi.2021.07.018>.
- Seeßle J, Waterboer T, Hippchen T, et al. Persistent symptoms in adult patients 1 Year after coronavirus disease 2019 (COVID-19): a prospective cohort study. *Clin Infect Dis*. 2022;74:1191–1198. <https://doi.org/10.1093/cid/ciab611>.
- American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. fifth ed. 2013. Washington D.C.
- Rogers JP, Chesney E, Oliver D, 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 Psychiatr*. 2020;7:611–627. [https://doi.org/10.1016/S2215-0366\(20\)30203-0](https://doi.org/10.1016/S2215-0366(20)30203-0).
- Xiong Q, Xu M, Li J, et al. Clinical sequelae of COVID-19 survivors in Wuhan, China: a single-centre longitudinal study. *Clin Microbiol Infect*. 2021;27:89–95. <https://doi.org/10.1016/j.cmi.2020.09.023>.
- Baker MG, Peckham TK, Seixas NS. Estimating the burden of United States workers exposed to infection or disease: a key factor in containing risk of COVID-19 infection. *PLoS One*. 2020;15, e0232452. <https://doi.org/10.1371/journal.pone.0232452>. Published 2020 Apr 28.
- Mutambudzi M, Niedwiedz C, Macdonald EB, et al. Occupation and risk of severe COVID-19: prospective cohort study of 120 075 UK Biobank participants. *Occup Environ Med*. 2020;78:307–314. <https://doi.org/10.1136/oemed-2020-106731>.
- Mullins RJ, Meeker TJ, Vinch PM, et al. A cross-sectional time course of COVID-19 related worry, perceived stress, and general anxiety in the context of post-traumatic stress disorder-like symptomatology. *Int J Environ Res Publ Health*. 2022;19:7178. <https://doi.org/10.3390/ijerph19127178>. Published 2022 Jun 11.
- Ibrahim Sabra A, Abo El Ftouh Mohamed S. Assessment of psychological problems and traumatic stress response

- among survivors from COVID19 pandemic. *Int Egypt J Nursing Sci Res.* 2022;3:259–271. <https://doi.org/10.21608/ejnsr.2022.247079>.
18. Xie Q, Liu XB, Xu YM, Zhong BL. Understanding the psychiatric symptoms of COVID-19: a meta-analysis of studies assessing psychiatric symptoms in Chinese patients with and survivors of COVID-19 and SARS by using the Symptom Checklist-90-Revised. *Transl Psychiatry.* 2021;11:290. <https://doi.org/10.1038/s41398-021-01416-5>.
  19. Oh TK, Park HY, Song IA. Risk of psychological sequelae among coronavirus disease-2019 survivors: a nationwide cohort study in South Korea. *Depress Anxiety.* 2021;38:247–254.
  20. Huang C, Huang L, Wang Y, et al. 6-month consequences of COVID-19 in patients discharged from hospital: a cohort study. *Lancet.* 2021;397:220–232. [https://doi.org/10.1016/S0140-6736\(20\)32656-8](https://doi.org/10.1016/S0140-6736(20)32656-8).
  21. Park HY, Song IA, Lee SH, et al. Prevalence of mental illness among COVID-19 survivors in South Korea: nationwide cohort. *BJPsych Open.* 2021;7:e183. <https://doi.org/10.1192/bjo.2021.1001>. Published 2021 Oct 1.
  22. Mazza MG, De Lorenzo R, Conte C, et al. Anxiety and depression in COVID-19 survivors: role of inflammatory and clinical predictors. *Brain Behav Immun.* 2020;89:594–600. <https://doi.org/10.1016/j.bbi.2020.07.037>.