

# Mental Health Status among Hospitalized Patients with COVID-19 in Iran

Ali Kheradmand<sup>1</sup>, Ali Pirsalehi<sup>2\*</sup>, Mahsa Mahjani<sup>3\*</sup>, Banafshe Khoshgoui<sup>4</sup>

## Abstract

**Objective:** The recent escalated numbers of subjected COVID-19 patients and mortality rates have alerted the general population and authorities to its effects not only on physical health but also on different aspects of the society such as mental health. This study assesses the general mental health and immediate psychological impacts in hospitalized patients with COVID-19.

**Method:** In this cross-sectional study, 88 patients from two tertiary hospitals in Tehran agreed to complete the surveys. The Impact of Event Scale-Revised (IES-R) and 12 item General Health questionnaire (GHQ-12) were used to evaluate mental health and impact of disease. Epidemiological and sociodemographic information entailing underlying diseases was assessed by a researcher-made questionnaire.

**Results:** We found that the psychological impact of the current pandemic is mild to moderate. During the initial phase of the pandemic, the intellectual engagements, inducing post event stress is not yet entirely developed. However, patients had a moderate to high probability of psychiatric morbidity with 63.6% and 28.4%, respectively.

**Conclusion:** The effect of such viral pandemic on mental health is inevitable. As we conducted the study in the dire times of the outbreak, patients showed a high probability of psychiatric morbidity. On the other hand, since the study was done in the initial phase of the epidemic, we detected mild effects of the epidemic on PTSD in COVID-19 patients. Furthermore, several psychosocial protective programs should be implicated to address the mental complications.

**Key words:** COVID-19; Coronavirus; Mental Health; Pandemic; SARS-CoV-2

1. Department of Psychiatry, Taleghani Hospital Research Development Committee, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
2. Department of Internal Medicine, Taleghani Hospital Research Development Committee, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
3. General Practitioner, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
4. Taleghani Hospital Research Development Committee, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

\*Corresponding Authors:

Ali Pirsalehi

Address: Department of Internal Medicine, Taleghani Hospital Research Development Committee, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran, Postal Code: 1985711151.

Tel: 98-21 22432560, Fax: 98- 21 22432570, Email: pirsalehi@sbmu.ac.ir

Mahsa Mahjani

Address: General Practitioner, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran, Postal Code: 1985711151.

Tel: 98-21 22432560, Fax: 98-21 22432570, Email: mahjani@sbmu.ac.ir

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In the late 2019, the infectious respiratory disease known as Covid-19 in Wuhan, China, became an epidemiological concern (1). By its migration beyond Wuhan and throughout, the World Health Organization “WHO” declared this event as a global health threat. This virus, which causes an atypical pneumonia, has showed high contagious potentiality and is so far a peerless infection in its velocity of transmission (2). As the number of patients escalated worldwide, the attempts to restrain the spread of virus were done through imposed quarantine. This strategy is considered the most effective method for controlling communicable diseases for decades (3). It separates individuals who are vulnerable to disease, patients themselves, and the ones who have been exposed to its agents. The constrained contact-tracing scheme includes 14 days of isolation, which is a correspondent to the appraised remission and/or incubation period (4).

The situation, however, may result in patients experiencing mental health outcomes. As the attention raised toward this recent outbreak, patients and general public encountered insuperable psychological unpleasantness, such as anxiety, depression, and fear (5). The emerging mental health problems not only may evolve stigma and detachment from the society, but also may have long lasting complications mostly remarked as PTSD (6). After experiencing a traumatic event, individuals will make a negative concept of trauma and maintain PTSD symptoms (6). Studies of psychological impacts of “SARS” provide empirical data on affirming mentioned symptoms (7). Based on received studies, confusion and anger were frequently reported during biological disasters (8). Among the general population, patients are more likely to endure the mental effects and they may have serious concerns like fear of death .

Moreover, previous outbreaks asserted that patients are filled with the dread of being evicted from public (9). These derived psychological impacts can be exacerbated by progression of psychological symptoms as well as considerable adverse effects of treatments. Since the resembling scenarios of the past outbreaks have demonstrated that the mental health complications could last longer; likewise, the prevalence of such concerns might have been greater than the infection itself (10); thus, it is important to draw attention to the identification of patients’ psychological presentations .

Followed by reports of the first confirmed cases of SARS-CoV-2 in Qom, Iran on February, 19, 2020, it was announced as a major health catastrophe all over the country (11). Studies as essential as this presented article are needed for health managers to address mental health care during the pandemic .

The aim of this study was to examine the prevalence of posttraumatic stress as well as mental health comorbidities among COVID-19 patients. We also investigated the influencing associated factors.

## Materials and Methods

Our cross-sectional study consists of 88 participants subjected to COVID-19 who were admitted to the hospitals of Shahid Beheshti University of Medical Sciences. The volunteers were asked to complete the sociodemographic questionnaires and fill in their personal information anonymously. Sampling was done frequently. We have chosen the patients who had better health conditions and were relatively able to answer the questions properly. Nearly all of the individuals had already received sufficient medical care, whereas they were expected to be discharged from the hospital.

The epidemiological and sociodemographic data, such as history of exposure to the contaminating pathogens, gender, age, occupation, medical background, years of education, being a confirmed case or a suspected one, marital status, having a particular psychiatric illness, living alone or with their families, substance use, and domestic animal contacts of participants, were all collected. We evaluated the psychological effects of COVID-19 outbreak based on the measurements of IES-R (Impact of Event Scale-Revised) and GHQ-12 (General health questionnaire-12 items).

### Impact of Event Scale-Revised (IESR)

We used the Persian version of the original Weiss and Marmar Impact of Event Scale-Revised (IES-R) (12), which was found to be very valuable as a screening instrument for PTSD (13). The translation of such measurements is influenced by the culture, and transcultural consideration is essential to ensure content validity (14). The Persian version of IES-R has good internal consistency ( $\alpha$  Cronbach = 0.67-0.87) and test-retest reliability ( $r = 0.8-0.98$ ;  $P < 0.001$ ) and good convergent validity. (15) The 22-self reported modified items of IES-R were administered. The symptoms associated with PTSD following a traumatic life event and persistent negative emotions were scored from 1 to 4: (1 = not at all; 2 = rarely; 3 = sometimes; and 4 = often), with higher scores indicating more stressful impact. There were three subscales in the questionnaire: intrusion, avoidance, hyperarousal. In accordance to the recommendations given by the original authors of this version of IES-R, the responses are divided into three subgroups of mild, moderate, and severe impact. Scoring higher than 44 reflects severe impact.

### General Health Questionnaire-12 Items (GHQ-12)

We assessed the incidence of mental disorders among COVID-19 patients by the means of the 12- item general health questionnaire, which is the most extensively used screening instrument for common mental disorders. GHQ-12 is intended to screen for general (nonpsychotic) psychiatric morbidity (16). It has been widely used and, as a result, translated into many languages and extensively validated in general and clinical populations worldwide (17). It has been analyzed in different age groups; also, GHQ-12 can be used effectively to assess psychological well-being (18). Its validity and reliability were also tested in Iran in which they implied that this is

a valid tool for evaluating the probability of mental disorders in a particular group of people. The Cronbach's alpha coefficient for the Iranian version of GHQ-12 was 0.85. The alpha for the social dysfunction was found to be 0.77; it was 0.76 for the psychological distress. The principal component analysis revealed a 2-factor structure for the questionnaire, including social dysfunction and psychological distress that explained 48% of the observed variances by using the split-half method (19). This self-administered questionnaire is designed for busy clinical settings as well as the setting, which are stressful, and individuals are encountering abrupt tensions (18).

Scores about 18 showed high probability, therefore, the participants who had higher scores were more anticipated to have a mental disorder and consequently need more mental support.

This study was approved in Iranian Institutional Research Committee (ID: IR.SBMU.MSP.REC.1399.037).

## Results

### Patients' Demographics

As shown in Table 1, throughout our recruitment period, 88 patients agreed to cooperate and were included in the final analysis. Our study was unbalanced with respect to gender, with two thirds (N = 61) being males and (N = 27) being females. Our sample included patients aged from 17 to 65 years. The number of COVID-19 suspected patients compared to those of confirmed cases was fairly equal (N = 43; 49.9%) (N = 45; 51.1%), respectably. Most patients aged older than 50 years (N = 42; 47.7%) and few patients aged younger than 30 years. Most of the samples consist of individuals who were undereducated (N = 34; 38.6%) or with an associate's degree (N = 24; 27.7%). Mainly the patients were employers (N = 26; 29.5%) and housewives (N = 22; 25%) .

Three fourth of the patients were married and 79 lived with family members. Also, 64 had a moderate economic status. Approximately all of the participants (N = 86) had underlying diseases, hypertension was most frequently reported (N = 23; 26.1%), followed by diabetes (N = 16; 18.2%) (Table 2). Most of the patients took part in our study were nonsmokers and most of

them had no contacts with domestic animals; and 5 (5.7%) had a history of psychological illness .

### IES-R of the Patients

In the statistics of general scoring by IES-R, low levels of helplessness were reported (N = 36; 40.9%). A moderate impact of the outbreak was recorded in 28 patients (31.8%). In total, the average impact was low to moderate. Among suspected cases, the distress caused by the event was low (20.1%) and it was statistically significant (P value = 0.03%). Low scores of IES-R was seen in the undereducated patients compared to those with other educational levels. Our postdoctoral patient reported PTSD symptoms. Employers showed a moderate to severe impact and a low rate of stress level was assigned to jobless patients (N = 6; 6.7%). Patients with any kind of underlying disease showed an average impact of traumatic event (N = 32; 36.3%). Among participants without history of psychological disorder, 35 reported low rates of helplessness with the P value of 0.05. The ones who did not have contact with sick people had lower intrusion and avoidance concerning the COVID-19 outbreak (N = 29; 32.9%; P value = 0.15%). Less distress was in nonsmokers .

In the total population, 8% (N = 7) had a low risk of anxiety and mood disorder. Most of the participants showed an average prevalence of mental disorder (63.6%). Ages older than 50 years had a medium chance of mental illness. Of the COVID-19 patients with a history of psychiatric illness, the prevalence of anxiety and mood disorder reported to be moderate to high. There were no associations between smoking and the estimated anxiety. No significant relation was found between gender and mental health. Having an underlying chronic disease was relevant to the presence of mental problems (N = 23; 26.1%). A moderate to high economic status of participants resulted to a higher risk of mental disturbances. Undereducated patients displayed a moderate prevalence in terms of mental disorders. Higher incidents were recorded in patients with associates, bachelors, and master's degree compared to those with other educational levels, with 27.7% and 21.5%, respectively. Patients with the confirmed status of Covid-19 virus showed a moderate possibility of mental disorder (N = 31; 35.3%).

**Table 1. Demographics, GHQ-12 & IES-R Results of Hospitalized COVID-19 Patients**

Factors	No.	(%)	Impact of Events Scale GHQ-12				Impact of Events Scale IES-R			
			Low	Probable	high	p	low	moderate	severe	p
			No. & proportions (%)				No. & proportions (%)			
	<b>Total (88)</b>		<b>7(8%)</b>	<b>56(63.6%)</b>	<b>25(28.4%)</b>		<b>36(40.9%)</b>	<b>28(31.8)</b>	<b>24(27.3%)</b>	
Patient status=					0.38					0.03
suspected	43	48.9	5(5.6%)	2(2.2%)	13(14.7%)		23(26.1%)	9(10.2%)	11(12.5%)	
confirmed	45	51.1	25(28.4%)	31(35.2%)	12(13.6%)		13(14.7%)	19(21.5%)	13(14.7%)	
Age=					0.58					0.82
<30 years	7	8	1(1.1%)	6(6.8%)	0		4(4.5%)	2(2.2%)	1(1.1%)	

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30-40	23	26.1	3(3.4%)	14(15.6%)	6(6.8%)	11(12.5%)	7(7.9%)	5(5.6%)	
40-50	16	18.2	1(1.1%)	10(11.3%)	5(5.6%)	6(6.8%)	4(4.5%)	6(6.8%)	
>50 years	42	47.7	2(2.2%)	26(29.5%)	14(15.6%)	15(17%)	15(17%)	12(13.6%)	
Gender=					0.53				0.47
Male	61	69.3	6(6.8%)	37(42%)	18(20.4%)	28(31.8%)	17(7.9%)	18(20%)	
female	27	30.7	1(1.1%)	19(21.5%)	7(7.9%)	10(11.3%)	11(12.5%)	6(6.8%)	
Education=						0.2			0.44
undergraduate	34	38.6	6(6.8%)	22(25%)	6(6.8%)	15(17%)	10(11.3%)	9(10.2%)	
Associate's degree	24	27.3	0	14(15.9%)	10(11.3%)	9(10.2%)	7(7.9%)	8(9%)	
Bachelor's degree	19	21.6	0	13(14.7%)	6(6.8%)	8(9%)	9(10.2%)	2(2.2%)	
Master's degree	5	5.7	0	4(4.5%)	1(1.1%)	3(3.4%)	0	2(2.2%)	
doctorate	5	5.7	1(1.1%)	2(2.2%)	2(2.2%)	1(1.1%)	2(2.2%)	2(2.2%)	
postdoctoral	1	1.1	0	1(1.1%)	0	0	0	1(100%)	
Occupation=						0.28			0.13
employee	26	29.5	1(1.1%)	16(18.1%)	9(10.2%)	13(14.7%)	8(9%)	5(5.6%)	
worker	17	19.3	4(4.5%)	8(9%)	5(5.6%)	5(5.6%)	3(3.4%)	9(10.2%)	
retired	11	12.5	0	8(9%)	3(3.4%)	4(4.5%)	5(5.6%)	2(2.2%)	
employer	6	6.8	0	5(5.6%)	1(1.1%)	0	3(3.4%)	3(3.4%)	
jobless	6	6.8	1(1.1%)	5(5.6%)	0	4(4.5%)	2(2.2%)	0	
housewife	22	25	1(1.1%)	14(15.9%)	7(7.9%)	10(11.3%)	7(7.9%)	5(5.6%)	
Marital status=						0.64			0.64
single	19	21.6	3(3.4%)	12(13.6%)	4(4.5%)	9(10.2%)	5(5.6%)	5(5.6%)	
married	66	75	4(4.5%)	42(47.7%)	20(22.7%)	25(28.4%)	23(26.1%)	18(20.4%)	
divorced	3	3.4	0	2(2.2%)	1(1.1%)	2(2.2%)	0	1(1.1%)	
Living with/- =						0.87			0.21
family	79	89.8	6(6.8%)	50(56.8%)	23(26.1%)	30(34%)	27(30.6%)	22(25%)	
alone	9	10.2	1(1.1%)	6(6.8%)	2(2.2%)	6(6.8%)	1(1.1%)	2(2.2%)	
Economic status=						0.36			0.68
low	23	26.1	4(4.5%)	13(14.7%)	6(6.8%)	11(12.5%)	6(6.8%)	6(6.8%)	
moderate	64	72.7	3(3.4%)	42(47.7%)	19(21.5%)	24(27.2%)	22(25%)	18(20.4%)	
high	1	1.1	0	1(1.1%)	0	1	0	0	
Had contacts with the sick						0.82			0.67
Yes	21	23.4	1(1.1%)	14(15.9%)	6(6.8%)	7(7.9%)	7(7.9%)	7(7.9%)	
No	67	76.1	66.8%	42(47.7%)	19(21.5%)	29(32.9%)	21(23.8%)	17(19.3%)	
Underlying disease						0.43			0.15
Yes	86	97.7	6(6.8%)	54(61.3%)	23(26.1%)	32(36.3%)	28(31.8%)	23(26.1%)	
No	2	2.2	1(1.1%)	2(2.2%)	2(2.2%)	4(4.5%)	0	1(1.1%)	
History of psychiatric illness						0.62			0.05
Yes	5	5.7	0	4(4.5%)	1(1.1%)	1(1.1%)	4(4.5%)	0	
No	83	94.3	7(7.9%)	52(59%)	24(27.2%)	35(28.4%)	24(27.2%)	24(27.2%)	
Smoking						0.26			0.15
Yes	5	5.7	1(1.1%)	4(4.5%)	0	2(2.2%)	0	3(3.4%)	
No	83	94.3	6(6.8%)	52(59%)	25(28.4%)	34(38.6%)	28(31.8%)	21(23.8%)	

**Table 2. Underlying Diseases in Hospitalized COVID-19 Patients**

Underlying Disease	No.	(%)
Hypertension	23	26.1
Diabetics	16	18.2
Hyperlipidemia	11	12.5
GI diseases	7	8
Cancer	6	6.8
Myocardial Infarction	4	4.5
Other CVD	4	4.5
Head trauma	4	4.5
Pulmonary diseases	4	4.5
Dermatologic problems	4	4.5
Seizure	2	2.3
Cerebrovascular accident	1	1.1

## Discussion

COVID-19, as a highly transmissible disease, has had subtle influences on psychological status, particularly on the infected individuals (12). Our findings consist of IES-R score, including mild to moderate distress among patients and only 27.3% of participants were subjected to severe PTSD symptoms. Our results represented low rates of distress due to the pandemic. One plausible reason for this is explained by the impressive time setting in which our study was conducted, as we have gathered the data during the dire times of the outbreak and the crisis was yet in its acute stage. During the initial phase of the epidemics, the perception of life threat had not been fully established and the lethality of the virus might not have been thoroughly comprehended. Studies have shown that the prevailing stress level in the community not only wouldn't be mitigated post outbreak, but also would gradually be deteriorated (20). Our hypothesis is that post trauma stress symptoms would come to surface over time. As an affirmation to our assertion, a study of survivors of "SARS" after 1 year showed high levels of distress and indicated that 64% were potentially psychiatric cases (21). Their results appeared higher compared to the study by Kitty K Wu et al in survivors 3 months after hospital discharge (22). Relevant to our results, merely 4.6% of patients in Wuhan, China, revealed experiencing PTSD symptoms after 1 month of COVID-19 occurrence (23). These remarkable differences can be defined through the diverse characteristics of the societies and the different measurements they implied. A possible explanation can be related to previous endured disasters, which had been on stream throughout our nation, hence, prior to exposure to tragedies, the concept is described by individuals' preparedness toward unexpected hazards. (24)(25). Furthermore, the emotional response in our community was less reported.

General public in Iran are provided with scant availability and accessibility of internet networking (26). Additionally, among the elderly in our sample who make the majority of admitted Covid-19 patients, technology acceptance is not entirely promoted (27). Regarding the mentioned conditions, the differences can further be justified by the association of social media exposure with increased mental health problems during COVID-19 outbreak (28). However, this statement is of high controversy. Moreover, we should be aware of the fact that overall most individuals may exhibit resilience (29). We found moderate to severe probability of mental disorder by GHQ-12 scores compared to the median point of prevalence pertained to psychiatric disorders, which was announced 42.7% among the general population in Tehran, Iran (30). Our incidence of psychological disturbances was significantly higher than the normal time. We had more rates of mental problems than other studies of such concern among public population and health care workers during COVID-19 (5) (31). In Xiano et al study, individuals in isolation had the mean anxiety rate of 55.4% (32). The intelligible logic behind this contrast is that our sample were of hospitalized patients who have already been affected by the virus and are still receiving ward medical care. Therefore, experiencing more mental health problems is predicted.

In the scope of SARS, our results are consistent with those of Mak et al, pointing out the incidence of 58.9% of any DSM-IV psychiatric disorder 30 months post-SARS (7). Our figure is also partially compatible with findings of Prince of Whale hospital's SARS patients (33). Similar data were accounted during the isolation time of MERS; the prevalence of anxiety symptoms was reported 47.2% in MERS patients. (34)

Our recruited patients who were officially identified as confirmed cases of Covid-19, had higher experiences of PTSD and showed a moderate incident of mental health abnormalities, compared to suspected cases. Statistical significance was observed between the 2 subgroups (P value = 0.03). This result could be due to the confirmed patients' mass feelings of hysteria and the solicitude of death.

We found that being employed had little influence on depressive symptoms. A compatible study indicated same results (35). Patients who signed as employers were struggling with more psychiatric problems. Consistent with this finding, among business owners in India, there was an association between occupation and mental health (36). As ongoing economic practice is facing obstacles, due to the public restrictions of transport and trade as well as the lockdown imposition in cities, these recurrent circumstances have endangered many occupations. Other results have been received declaring that professional and employed individuals had higher risk of depression than the unemployed ones. (37) The patients who were not formerly diagnosed with the previous mental illness revealed more posttraumatic

stress, which is in contrast with a number of existing studies, including the findings of MERS-related anxiety and anger four to six months after removal from isolation (38). The probable neurotransmitter abnormalities in psychiatric patients could be a rational explanation (40). This class of Covid-19 patients has remarkable vulnerability due to the impaired cognition and diminished efforts regarding personal hygiene and protection subsequently build on more challenges to their therapeutic approach (40).

Among our samples with underlying diseases, hypertension was more prevalent. There are data that suggest HTN is an independent risk factor for depression, particularly for those with recurring episodes or long-term history of the disease (41). Generally, our findings showed a relationship between coexisting common chronic disease and depression. Same results were found in studies of Western societies (42). The Indian authors cite that comorbidity increased sleep numbness and fatigue (36). Comorbid patients are more likely to represent much persistent course of anxiety compared to pure cases. The presence of pre-SARS medical illness was associated with long-term PTSD (7). As a result, an increased level of health anxiety was observed in individuals with chronic diseases (43). However, lower health conditions are assumed a predisposition of PTSD, as it might weaken the ability to intellectually overcome trauma. This content predominantly attributes to its recognition as one of the most determinant factors for the rampant death toll of Covid-19.

Our result interestingly demonstrates that most of our less educated population had low scores on IES-R and a low prevalence of mental disorders, which was also mentioned in the NCS-R findings announcing that the lower the education years, the lower the life-time depression (44). Such correlation was also found in another study on Covid-19 and anxiety (45). Some more similar results are provided (46). However, results differ with other inquiries regarding educational attainments and its relation to mental health, in which authors stated that there was a significant increase in depression among those with middle education (47).

### Limitation

Our report investigated the mental impact of Covid-19 and psychiatric status on patients. However, this was a cross-sectional study and had a limited sample size. Also, our study was performed during a specific time period at the peak days of the pandemic, and thus only perceived changes on psychological terms were documented. Additionally, it is predicted that patients with much higher level of stress refused to participate in the questionnaire. However, further studies are required to precisely measure the mental health issues and the rate of posttraumatic stress in future. Despite all the limitations mentioned, our study underscores the importance of setting out appropriate strategies for

mental consequences of such outbreaks. Subsequently, we have assisted in modeling the timely interventions for managing the likely mental sequels of the infection.

### Conclusion

The mental health impact of the current viral situation is factual. Our results represent that Covid-19 pandemic is by far a psychological phenomenon. Patients affected with this flagrant virus were remarkably struggling with anxiety and PTSD symptoms. The definite and confirmed cases and patients with common chronic diseases had more stress.

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### Conflict of Interest

None.

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