Depression, anxiety and stress among patients with COVID-19: A cross-sectional study

Malihe Sadat Moayed,[1] Amir Vahedian-Azimi,[1*] Golshan Mirmomeni,[2] Farshid Rahimibashar,[3] Keivan Goharimoghadam,[4] Mohamad Amin Pourhoseingholi,[5] Mohsen Abbasi-Farajzadeh,[6] Mostafa Hekmat,[7] Thozhukat Sathyapalan,[8] Amirhossein Sahebkar[9,10,11*]

1 Trauma research center, Nursing Faculty, Baqiyatallah University of Medical Sciences, Tehran, Iran.
2 Hearing Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
3 Anesthesia and Critical Care Department, Hamadan University of Medical Sciences, Hamadan, Iran
4 Internal Medicine, Shariati hospital, Tehran University of Medical Sciences, Tehran, Iran.
5 Gastroenterology and Liver Diseases Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
6 Marine Medicine Research Center, Baqiyatallah University of Medical Sciences, Tehran, Iran.
7 Health Management Research Center, Baqiyatallah University of Medical Sciences, Tehran, Iran
8 Academic Diabetes, Endocrinology and Metabolism, Hull York Medical School, University of Hull, United Kingdom of Great Britain and Northern Ireland
9 Halal Research Center of IRI, FDA, Tehran, Iran
10 Biotechnology Research Center, Pharmaceutical Technology Institute, Mashhad University of Medical Sciences, Mashhad, Iran
11 Neurogenic Inflammation Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

Running title: COVID-19 and psychological distress in health care workers

Correspondence:

Amir Vahedian-Azimi, PhD, Trauma Research Center, Nursing Faculty, Baqiyatallah University of Medical Sciences, Tehran, Iran.

Amirhossein Sahebkar, PharmD, PhD, Department of Medical Biotechnology, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran, P.O. Box: 91779-48564, Iran. Tel: 985138002288; Fax: 985138002287; E-mail: sahebkara@mums.ac.ir; amir_saheb2000@yahoo.com

Conflict of interest statement

No conflict of interest was declared.

Abstract

Aim: Patients with confirmed COVID-19 infection can develop several psychological consequences. Epidemiological data on mental health and psychological disorder in patients infected with COVID-19 pneumonia are not available in Iranian patients. The purpose of this study was to evaluate the anxiety, stress and depression of patients with COVID-19**.**

Material and Methods: This cross-sectional survey was conducted in 2020. All the confirmed patients with COVID-19 were included in the study by census sampling. Assessment of the anxiety, stress and depression was done by DASS-21 questionnaire. All statistical analyses were performed using R version 3.5.1.

Results: The questionnaires were completed by 221 patients with COVID-19 infection (204 males, 17 females). The mean age was 45.90 ± 7.73 years. Our results indicated that the mean scores of symptoms of depression and anxiety were at "extremely severe" level, while stress levels were at "severe" level among this cohort. The prevalence of "extremely severe" symptoms of depression and anxiety were 54.29% and 97.29%, respectively. The prevalence of "severe" symptom of stress was 46.61%.

Conclusion: In this study, patients infected with COVID-19 reported severe and extremely severe experience psychological distress. To date its necessary special intervention programs for the confirmed patients with emerging infectious disease COVID-19 to promote mental health needs.

Key words: COVID-19, Corona virus, Patient, Depression, Anxiety, Stress, Iran

Introduction:

Coronavirus disease 2019 (COVID-19) is mainly a respiratory system infection with a newly diagnosed coronavirus thought to have originated as a zoonotic virus which has human pathogenicity (1). The virus transmits from person to person through close contact or airborne probably as respiratory droplets (2). Approximately 13% of people with confirmed COVID-19infection were reported to have severe respiratory symptoms, 4% have been cured and 2% have died (3).

Therefore, all patients with confirmed or suspected COVID-19 experience fear due to complications of the disease including severe disability and death with a potentially fatal new virus in the absence of any definitive treatment. In addition, symptoms such as fever, hypoxia and cough, as well as adverse effects of treatment, could lead to worsening of anxiety and mental distress (4, 5). In the early phase of the SARS or MERS outbreak, a range of psychiatric morbidities, including persistent depression, anxiety, panic attacks, psychomotor excitement, psychotic symptoms, delirium and even suicidality, were reported(6, 7). The persistence of depression in MERS survivors leads to prolonged chronic post-traumatic stress symptoms even 18 months after MERS infection (8). A 14-day quarantine period and restrictions on social contact, which form part of the public health responses to the COVID-19 pneumonia outbreak could experience boredom, a higher level of depression, loneliness and anger. It also could increase patients' guilt and anxiety about the effects of pathogenesis, quarantine and stigma on their families and friends (4, 9). Among the survivors of the severe acute respiratory syndrome (SARS), stress levels were persistently elevated one year after the SARS outbreak compared to people who were not infected with SARS. SARS survivors had high levels of psychological distress even one year after the outbreak. This evidence suggests that the long-term psychological implications of infectious diseases should not be ignored and mental health services could play an important role in the rehabilitation of patients (6).

To date, epidemiological data on the mental health of patients with COVID-19 in Iran has not been identified. The main purpose of this study was to measure the prevalence and severity of this psychological distress, gauge the current mental health burden on patients with a diagnosis of COVID-19).

Material and methods:

Study design:

This cross-sectional survey was conducted in February and March 2020.

Settings and participants

Baqiyatallah Hospital is one of the main referral centers for the specialized diagnosis and treatment of patients with COVID-19 in Tehran. Therefore, participants were recruited mainly from patients referred to this hospital and patients from other centers that have consented to participate in the

current study. Other centers also participated in this study but since the number of participants from other centers was not high enough for having separate ethics code, the Dean of each centre has approved data collection for their respective centers. All patients over 18 years of age who were interested in participating in this study, who can read and write, with no preexisting physical disabilities or mental disorders, were included. All participants were confirmed COVID 19 positive. Census sampling was used.

Sample size

Cochran's sample size estimation formula in the epidemiologic study was used(10). The first and second type errors were considered five-hundredth and two-tenths, respectively. A 50% satisfaction probability was assumed to estimate the maximum sample size. The sample size was calculated 87 patients. According to the nature of the study and the probability of sample size drop, 20% drop was considered and the final sample size was considered equal to 110.

Research Tools:

Demographic characteristics were self-reported by participants. These included sex, age, job, marital status, educational qualification and history of chronic disease.

The Depression, Anxiety, Stress Scale (DASS) was used to collect data. This questionnaire was designed and validated by Lovibond in 1995 (11) to measure psychological distress among the community with 21 items. This questionnaire included three subscales and every subscale had seven questions. In the translated version, for each question, the choices were never, little, moderate, and many. The lowest score for each question was zero question and the highest score was 3.

Validity and reliability of this questionnaire were previously established in Iran. According to the original questionnaire, three subscales is high internal consistency with Cronbach's alpha 0.77, 0.79 and 0.78 for depression, anxiety and stress respectively (12), Another study has reported 0.94 Cronbach's alpha for depression, 0.92 for anxiety and 0.82 for stress (13).

The questions 3, 5, 10, 13, 16, 17, and 21 were related to depression and the questions 1, 6, 8, 11, 12, 14, and 18 assesses the stress and finally, the questions 2, 4, 7, 9, 15, 19, and 20 were related to anxiety.

The cutoff points of the subscales were as follows:

Depression: Score 0-4 were considered normal, 5-6 mild, 7-10 average, 11-13 severe and higher than 14 were considered very severe.

Stress: Scores from 0-7 were normal, 8-9 mild, 10-12 average, 13-16 severe, and higher than 17 were considered very severe.

Anxiety: 0-3 were normal, 4-5 mild, 6-7 average, 8-9 severe, and higher than 10 were considered very severe.

Ethical consideration

The study has been approved by the Ethics Committee of Baqiyatallah University of Medical Sciences with code IR.BMSU.REC.1398.438. The objectives of the study were stated to all patients and informed consent was obtained from the patients to participate in the study. They were also assured of confidentiality.

Statistical analysis

All analyses were performed using R statistical software (version 3.5.1). The variables in this study included gender (male, female), age (>30, 41-50, <40 years), marital status (married, unmarried), job (governmental, non-governmental, unemployed, student, and housewife), background disease (yes, no), and qualification (diploma or lower, associate, bachelor's degree, master s degree or higher) variables. The values for each variable were presented as the mean and standard deviation. Independent samples *t*-test was applied as a parametric test to compare psychological symptoms (stress, depression and anxiety) scores by gender and marital status. One-way analysis of variance (ANOVA) test was applied to compare the mean differences in psychological factors in terms of age group, job and educational qualification. A *p*-value of <0.05 was considered a significant level in this study.

Results:

The DASS-21 questionnaires were completed by 221 patients with COVID-19 (204 males, 17 females), which their demographic characteristics are summarized in Table 1. The sample mean age was 45.9 years, with an SD of 7.73 years. A high proportion of patients reported a non-governmental (37.1%) job. Most of the participants were unmarried (55.21%). In addition, 31.22% and 29.41% of the patients had "Bachelor" or "Associate" education level, respectively (Table 1).

Table 1. The mean (±SD) scores for psychological symptoms in terms of age group, gender, marital status, job, education level, and history of background disease (n=221)

Variable		Frequency (%)	Anxiety Score	Stress Score	Depression Score
Age	<40 years	70 (31.67)	27.83±4.82	28.97±5.21	27.86±4.70
	41-50 years	103 (46.61)	27.51±5.17	28.54±5.34	28.25±5.02
	>50years	48 (21.72)	27.58±5.55	28.17±4.88	28.00±5.75
p-value			0.923	0.705	0.876
Gender	Male	204 (92.31)	27.68±5.07	28.47±5.01	28.11±4.84
	Female	17 (7.69)	27.06±5.88	30.12±6.98	27.65±7.46
p-value			0.634	0.354	0.805
Marital status	Married	99 (44.79)	27.33±5.05	28.42±5.03	28.48±5.47
	Unmarried	122 (55.21)	27.87±5.19	28.74±5.33	27.74±4.71
p-value			0.441	0.656	0.277
Job	Governmental	34 (15.39)	28.00±5.72	28.00±4.90	27.59±4.29
	Non-governmental	82 (37.10)	27.73±5.16	28.66±5.38	28.44±5.71
	Unemployed	54 (24.43)	27.07±4.77	28.74±5.43	28.67±4.88
	Student	39 (17.65)	27.74±5.30	28.31±5.14	27.28±4.91
	Housewife	12 (5.43)	28.00±4.75	30.17±3.95	26.83±3.56
p-value			0.922	0.790	0.536
Qualification	Diploma or lower	30 (13.57)	26.73±4.25	28.93±4.63	28.27±4.75
	Associate	65 (29.41)	28.21±5.11	28.31±5.79	27.97±5.45
	Bachelor's degree	69 (31.22)	27.77±5.29	28.14±5.24	28.43±4.63
	Master's degree or higher	57 (25.73)	27.26±5.39	29.30±4.70	27.65±5.37
p-value			0.553	0.598	0.846
Background Disease	None	144(65.16)	28.14±5.08	28.81±5.35	28.20±5.13
	Cardiovascular	16 (7.24)	27.13±6.41	29.13±3.72	26.75±5.05
	Diabetic	21(9.33)	26.95±5.24	29.33±5.03	28.00±5.10
	Hypertension	16 (7.24)	25.88±4.98	26.50±4.10	27.75±4.31
	Allergy	12 (5.44)	26.50±4.10	25.17±5.15	28.00±5.66
	Chronic kidney	7 (3.33)	27.14±5.27	31.14±6.62	30.28±5.71
	Chronic Liver	5 (2.26)	26.40±4.56	29.20±2.28	26.80±4.60
p-value			0.581	0.105	0.823

*: Statistically significant

The study results of demonstrated that the comparison of mean scores for stress, depression and anxiety subscales were not statistically significant in terms of "age", "gender", "job", "marital status", " background disease ", and "qualification" variables (Table 1).

Table 2 shows the prevalence and score severity ratings of psychological symptoms among patients with COVID 19 infection. Our results indicated that the mean scores of symptoms of depression and anxiety were at "extremely severe" level, while stress level were at "severe" level. The prevalence of "extremely severe" symptoms of depression and anxiety were 54.29% and 97.29%, respectively. The prevalence of "severe" symptom of stress was 46.61%.

Table 2. Prevalence and score severity ratings of depression, anxiety, and stress among patients with Corona (n=221)

Psychological Variable		Frequency	%
Depression	Moderate	16	7.25
	Severe	85	38.46
	Extremely severe	120	54.29
	MEAN ± SD	28.07 ± 5.07	
Anxiety	Severe	6	2.71
	Extremely severe	215	97.29
	MEAN ± SD	27.62 ± 5.13	
Stress	Mild	1	0.45
	Moderate	94	42.53
	Severe	103	46.61
	Extremely severe	23	10.41
	MEAN ± SD	28.59 ± 5.19	

Discussion:

The purpose of this study was to evaluate the anxiety, stress, and depression in hospitalized Iranian patients with confirmed COVID-19. This can serve as important evidence to manage the promotion of mental health among patients with COVID-19. The results of the current study indicated that the patients with confirmed COVID-19 revealed a high prevalence of symptoms related to mental disorders. All the patients reported different amounts of depression, anxiety, and stress. The extremely severe scale of anxiety was presented in 97.27% of patients; also "severe" depression signs were reported by 54.29% patients.

All participated patients had signs of stress. The prevalence of "severe" symptoms of stress was 46.61%. Similar results of our study were reported by 90% of SARS infected patients. There was an increased prevalence of general stress and negative psychological effects in these patients infected with SARS (14). Another study reported that patients with MERS infection had an increased incidence of clinically relevant depressive and PTSD symptoms (8). Mac and et al. reported that 44% and 47.8% of survivors of SARS suffered from depressive disorders and PTSD after their infection, respectively (15).

None of the demographic variables were significantly different with respect to the mean scores of depression, anxiety, and stress. We did not observe any effect of age in our sample of patients. However, Yang et al. reported that older adults in crisis conditions could be experiencing significantly more distress. Therefore, older population need more mental health intervention input (16). Stress levels were not related to the educational qualification indicating that patients with all levels of educational qualifications who are positive for COVID-19 were adversely affected.

There is growing evidence that in confirmed or suspected COVID-19 patients will need more advanced mental health care (17). Despite the mental health problems reported among patients with COVID-19, not many health care workers receive training in providing mental health care (8, 18, 19). For individuals with suspected or confirmed COVID-19 infection who are under treatment (quarantine or at home), health service personnel should provide medical care and mental health care (20). Special attention needs to be paid for the behavioral and mood changes of these patients. Insomnia, anxiety, anger, rumination, decreased concentration, low mood, and loss of energy are listed as warning symptoms that should be evaluated and managed by mental health professionals (17). In view of this, there is an urgent need to develop and recommend online and onsite mental health interventions such as psychotherapy (21). This should involve multidisciplinary mental health teams with expertise in specialized psychiatric treatments to provide appropriate mental health services during and after this COVID epidemic with specific treatment plans, progress reports and health status updates. There is a need to secure services to provide psychological counseling in this

group of patients. There should be more use of electronic devices and applications for affected patients as well as their families and members of the public. There is also a need to establish safe communication channels between patients and families. To date, mental health interventions are only provided for those presenting with more severe mental health problems (5). Since personnel including clinical psychiatrists, psychologists, and mental health social workers, are unable to enter isolation wards for patients with COVID-19, frontline health-care workers should be trained to provide psychological interventions for patients with COVID-19 in hospitals (20).

One of the limitations of this study was that this is a single-center cross-sectional survey limiting the generalizability of our findings. Our study was conducted at the onset of the COVID-19 outbreak; therefore there might be further changes in the mental health symptoms in these patients. We did not assess the risk factors that affected on depression, anxiety and stress in patients with COVID-19 infection. Also, the absence of mental disease in these patients was self-reported.

Conclusion:

In this study, patients infected with COVID-19 reported severe and extremely severe psychological distress. There is a need for introduction of the mental health interventions in this patient group.

Reference:

1.	Centres for Disease Control and Prevention. Transmission-Based precautions | basics | infection control | CDC, 2007. Available:https://www.cdc.gov/infectioncontrol/basics/transmission-basedprecautions.html [Accessed 9 Feb 2019]. [Internet.[

2.	Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, et al. Early transmission dynamics in Wuhan, China, of novel coronavirus–infected pneumonia. New England Journal of Medicine. 2020.

3.	Health Commission of Hubei Province. Update on epidemic situation of novel coronavirus-infected pneumonia in Hubei province. Feb 4, 2020. http://wjw.hubei.gov.cn/fjd/dtyw/202002/t20200205_2019293.shtml (accessed Feb 5, 2020.(

4.	Xiang Y-T, Yang Y, Li W, Zhang L, Zhang Q, Cheung T, et al. Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. The Lancet Psychiatry. 2020;7(3):228-9.

5.	Park S-C, Park YC. Mental Health Care Measures in Response to the 2019 Novel Coronavirus Outbreak in Korea. Psychiatry Investigation. 2020;17(2):85.

6.	Lee AM, Wong JG, McAlonan GM, Cheung V, Cheung C, Sham PC, et al. Stress and psychological distress among SARS survivors 1 year after the outbreak. The Canadian Journal of Psychiatry. 2007;52(4):233-40.

7.	Moldofsky H, Patcai J. Chronic widespread musculoskeletal pain, fatigue ,depression and disordered sleep in chronic post-SARS syndrome; a case-controlled study. BMC neurology. 2011;11(1):37.

8.	Lee SH, Shin H-S, Park HY, Kim JL, Lee JJ, Lee H, et al. Depression as a mediator of chronic fatigue and post-traumatic stress symptoms in middle east respiratory syndrome survivors. Psychiatry investigation. 2019;16(1):59.

9.	Purssell E, Gould D, Chudleigh J. Impact of isolation on hospitalised patients who are infectious: systematic review with meta-analysis. BMJ open. 2020;10(2.(

10.	Kasiulevičius V, Šapoka V, Filipavičiūtė R. Sample size calculation in epidemiological studies. Gerontologija. 2006;7(4):225-31.

11.	Lovibond PF. Long-term stability of depression, anxiety, and stress syndromes. Journal of abnormal psychology. 1998;107(3.520:(

12.	Sahebi A, Asghari MJ, Salari R. Validation of depression anxiety and stress scale (DASS-21) for an Iranian population. 2005.

13.	Moradi Panah F. The effect of music on stress, anxiety and depression in patients undergoing cardiac catheterization in Tarbiat Modarres University; 2005. Back to cited text. (21.(

14.	Wu P, Fang Y, Guan Z, Fan B, Kong J, Yao Z, et al. The psychological impact of the SARS epidemic on hospital employees in China: exposure, risk perception, and altruistic acceptance ofrisk. The Canadian Journal of Psychiatry. 2009;54(5):302-11.

15.	Mak IWC, Chu CM, Pan PC, Yiu MGC, Chan VL. Long-term psychiatric morbidities among SARS survivors. General hospital psychiatry. 2009;31(4):318-26.

16.	Yang Y, Li W, Zhang Q, Zhang L, CheungT, Xiang Y-T. Mental health services for older adults in China during the COVID-19 outbreak. The Lancet Psychiatry. 2020;7(4):e19.

17.	National Center for Disaster Trauma. Psychological support guidance against infectious disease distress. Available at: https://nct.go.kr/servi-ceCenter/noticeList.do. Accessed February 7.

18.	Roberts T, Esponda GM, Krupchanka D, Shidhaye R, Patel V, Rathod S. Factors associated with health service utilisation for common mental disorders: a systematic review. BMC psychiatry . 2018;18(1):262.

19.	Chen Q, Liang M, Li Y, Guo J, Fei D, Wang L, et al. Mental health care for medical staff in China during the COVID-19 outbreak. The Lancet Psychiatry. 2020.

20.	Duan L, Zhu G. Psychological interventions for people affected by the COVID-19 epidemic. The Lancet Psychiatry. 2020;7(4):300-2.

.21   Jiang X, Deng L, Zhu Y, Ji H, Tao L, Liu L, et al. Psychological crisis intervention during the outbreak period of new coronavirus pneumonia from experience in Shanghai. Psychiatry Research. 202.0:112903

Centres for Disease Control and Prevention. Transmission-Based precautions | basics | 1. infection control | CDC, 2007. Available:https://www.cdc.gov/infectioncontrol/basics/transmission-basedprecautions.html [Accessed 9 Feb 2019]. [Internet].

Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, et al. Early transmission dynamics in   2. Wuhan, China, of novel coronavirus–infected pneumonia. New England Journal of Medicine. 2020.

Health Commission of Hubei Province. Update on epidemic situation of novel coronavirus-   3. infected pneumonia in Hubei province. Feb 4, 2020. http://wjw.hubei.gov.cn/fjd/dtyw/202002/t20200205_2019293.shtml (accessed Feb 5, 2020).

Xiang Y-T, Yang Y, Li W, Zhang L, Zhang Q, Cheung T, et al. Timely mental health care for   4. the 2019 novel coronavirus outbreak is urgently needed. The Lancet Psychiatry. 2020;7(3):228-9.

Park S-C, Park YC. Mental Health Care Measures in Response to the 2019 Novel   5. Coronavirus Outbreak in Korea. Psychiatry Investigation. 2020;17(2):85.

Lee AM, Wong JG, McAlonan GM, Cheung V, Cheung C, Sham PC, et al. Stress and   6. psychological distress among SARS survivors 1 year after the outbreak. The Canadian Journal of Psychiatry. 2007;52(4):233-40.

Moldofsky H, Patcai J. Chronic widespread musculoskeletal pain, fatigue, depression and   7. disordered sleep in chronic post-SARS syndrome; a case-controlled study. BMC neurology. 2011;11(1):37.

Lee SH, Shin H-S, Park HY, Kim JL, Lee JJ, Lee H, et al. Depression as a mediator of   8. chronic fatigue and post-traumatic stress symptoms in middle east respiratory syndrome survivors. Psychiatry investigation. 2019;16(1):59.

Purssell E, Gould D, Chudleigh J. Impact of isolation on hospitalised patients who are   9. infectious: systematic review with meta-analysis. BMJ open. 2020;10(2).

Kasiulevičius V, Šapoka V, Filipavičiūtė R. Sample size calculation in epidemiological   10. studies. Gerontologija. 2006;7(4):225-31.

Lovibond PF. Long-term stability of depression, anxiety, and stress syndromes. Journal of   11. abnormal psychology. 1998;107(3):520.

Sahebi A, Asghari MJ, Salari R. Validation of depression anxiety and stress scale (DASS-21)   12. for an Iranian population. 2005.

Moradi Panah F. The effect of music on stress, anxiety and depression in patients undergoing   13. cardiac catheterization in Tarbiat Modarres University; 2005. Back to cited text. (21).

Wu P, Fang Y, Guan Z, Fan B, Kong J, Yao Z, et al. The psychological impact of the SARS   14. epidemic on hospital employees in China: exposure, risk perception, and altruistic acceptance of risk. The Canadian Journal of Psychiatry. 2009;54(5):302-11.

Mak IWC, Chu CM, Pan PC, Yiu MGC, Chan VL. Long-term psychiatric morbidities among   15. SARS survivors. General hospital psychiatry. 2009;31(4):318-26.

Yang Y, Li W, Zhang Q, Zhang L, Cheung T, Xiang Y-T. Mental health services for older   16. adults in China during the COVID-19 outbreak. The Lancet Psychiatry. 2020;7(4):e19.

National Center for Disaster Trauma. Psychological support guidance against infectious   17. disease distress. Available at: https://nct.go.kr/servi-ceCenter/noticeList.do. Accessed February 7.

Roberts T, Esponda GM, Krupchanka D, Shidhaye R, Patel V, Rathod S. Factors associated   18. with health service utilisation for common mental disorders: a systematic review. BMC psychiatry. 2018;18(1):262.

Chen Q, Liang M, Li Y, Guo J, Fei D, Wang L, et al. Mental health care for medical staff in   19. China during the COVID-19 outbreak. The Lancet Psychiatry. 2020.

Duan L, Zhu G. Psychological interventions for people affected by the COVID-19 epidemic.   20. The Lancet Psychiatry. 2020;7(4):300-2.

21.   Jiang X, Deng L, Zhu Y, Ji H, Tao L, Liu L, et al. Psychological crisis intervention during the outbreak period of new coronavirus pneumonia from experience in Shanghai. Psychiatry Research. 2020:112903.