



## "Impact on Mental Health and Quality of Life in patients of COVID-19: A Prospective Study"

Dr. Lakhan Kataria, Dr. Anuja Bansal, Dr. Nisheet Patel, Dr. Vaibhav Joshi  
*Prof & Head, Department of Psychiatry, Smt. B K Shah Medical Institute & Research Centre, Sumandeep Vidyapeeth, Piparia, Vadodara*

*3<sup>rd</sup> year resident, Department of Psychiatry, Smt. B K Shah Medical Institute & Research Centre, Sumandeep Vidyapeeth, Piparia, Vadodara*

*Assistant professor, Department of Psychiatry, Smt. B K Shah Medical Institute & Research Centre, Sumandeep Vidyapeeth, Piparia, Vadodara*

*Resident, Department of Psychiatry, Smt. B K Shah Medical Institute & Research Centre, Sumandeep Vidyapeeth, Piparia, Vadodara*

Submitted: 25-03-2022

Accepted: 04-04-2022

**ABSTRACT- Background & Objectives:** High risk of mental health problems is associated with Coronavirus Disease 2019 (COVID-19). This study explored the prevalence of depressive and anxiety symptoms and assessment of quality of life in patients of COVID-19. **Methodology:** It's a prospective study of 120 COVID-19 positive participants who were assessed by using Beck Depression Inventory-II (BDI-II), Hamilton Anxiety Rating Scale (HAM-A), World Health Organization Quality of Life Instruments (WHOQOL-BREF) during day 0 and 2 months. Those having above cut off value were interviewed clinically for any psychiatric signs and symptoms. **Results:** It was found that prevalence of mild, moderate and severe depression (as per BDI-II) was 20%, 7.3% and 4.5% respectively. Those having above cut off value for depression (14) were clinically interviewed and 31.8% patients had MDD. The prevalence of mild, moderate and severe anxiety (according to HAM-A) was 87.3%, 10% and 2.7% respectively. Those having above cut off value for anxiety (17) were clinically interviewed and it was seen that 12.7% patients suffered from anxiety disorders. After two months, the prevalence of mild depression was found to be 6.4% (who previously had depression) and patients had mild anxiety but didn't fit into any DSM-5 clinical criteria for anxiety disorders. Comparing the four domains on WHOQOL-BREF, social relationship domain had highest while the physical health domain had the lowest scores. **Conclusion:** High prevalence of anxiety, depression and delirium in patients of covid demands screening during admission and psychiatric treatment measures in Treatment protocol of covid-19.

**KeyWords-** COVID-19, Depression and Anxiety, Quality of Life

### I. INTRODUCTION

Corona is a ssRNA virus which was discovered in the late 1960s. Corona viruses comes under Corona viridae family (Nidovirales order). The Corona virus has been named after the crown-like spikes which are present on the outer surface of the virus structure [1]. Similar viruses of the same family have shown outbreaks in the past, for example, severe acute respiratory syndrome coronavirus SARS-CoV in 2003, Human coronavirus HCoV NL63 in 2004 [2], HKU1 in 2005 [3], Middle east respiratory (MERS) in 2012. Now the novel version of this virus has appeared and possess a great threat of unmatched severity. The International Taxonomy of Viruses (ICTV) has named this novel pathogen as SARS-CoV-2 (previously known as 2019-nCoV) [4,5]. The first case of corona virus was found in Wuhan, China in a Chinese seafood market. Since then, it has been exponentially rising in numbers spreading from human to human via respiratory droplets [6]. Because no specific medication or vaccine is available, the situation is going out of control and worrisome [7]. Maintaining social distance, wearing a mask, and frequently sanitizing hands have been strictly advised to all the people [8]. India is no different from rest of the world, when it comes to the lockdown [9]. For Indians, challenges in the medical sector, further deepens the worries that heighten psychological distress [10]. **COVID-19 and Mental health-** Many people have fear of getting infected with the virus/disease resulting in anxiety, stress, and depression, etc [11]. The sense of emotional and physical tension which arises in the individual's body from any event that threatens homeostasis of body and mind is referred to as stress [12]. On the other hand, the body's natural response to stress due to the fear of the



unknown is termed as anxiety [13]. Depression is usually seen as a decrease interest in work and surroundings or disinterest in daily activities. It is inferred from previous knowledge that people who are fighting pandemic without any vaccine would result in fear of the coronavirus making them anxious, stressed and depressed. This excessive fear also resulted in people committing suicides [14,15]. Severe psychological stress such as anxiety and depression during Covid-19 pandemic was found among Chinese nationals in a study conducted by Wang et al. [16]. Similarly, another study on Chinese population found similar results [17]. **COVID-19 and Quality of Life-** During COVID-19 outbreak, Indian Government took strict actions to slow down the spread of corona virus in that stage only by imposing lockdown pan-India. Immigrants were also shifted from the airports and seaports to the special quarantine facilities arranged by the Indian Army directly for at least 14 days to control the spread. Awareness about the chances of spreading of virus and precautionary measures for protecting oneself and others were also taught to the people by Community health teams. Pan India lock-down and anxiety related to the corona virus's effects and transmission drastically affected the lives of public [18]. The fear of virus is also increasing because of the increase in the number of deaths and global spread. [19,20] This unpredictable and rapidly spreading disease leading to depression, stress and anxiety has resulted in universal awareness of the disease. According to WHO, all of these psychological responses are natural to the abruptly changing condition [21]. The pandemic and readily available information regarding the virus/disease has increased stress among common people significantly. As a result, rapidly expanding mass hysteria and panic regarding COVID-19 may result in psychological problems from all the socioeconomic domains. This could be even more harmful in the long run than the corona virus [22]. To the best of our knowledge, distress experienced (depression, anxiety and stress) by people during COVID-19 has not been explored altogether so far in India. However, few studies have reported the influence of pandemic on mental health or quality of life in COVID-19 positive patients, even though the pandemic has severely affected India and many other parts of the world. Therefore, our study aimed to assess whether there was an immediate impact of the COVID-19 on mental health, its related lifestyle habits and quality of life among COVID-19 positive patients and an attempt to fill this gap is done so that effective mental health

management can be planned by practitioners and policymakers

#### **Aims and Objectives-**

1. To study the prevalence of depression in COVID-19 positive patients.
2. To study the prevalence of anxiety in COVID-19 positive patients.
3. To assess the impact on Quality of Life in COVID-19 positive patients

#### **RESEARCH METHODOLOGY**

**Participants-** COVID-19 positive patients admitted in Tertiary Care Hospital

**Study design-** Prospective Study

**Sampling Technique-** Random sampling

Calculated using the following formula: [23]

$$n' = \frac{N Z^2 P (1 - P)}{d^2 (N - 1) + Z^2 P (1 - P)}$$

Where,

n' = sample size with finite population correction

N = population size (500)

Z = static for level of confidence

P = expected proportion (0.1)

d = precision (0.05)

Using the above data sample size comes out to be 109. It was decided to achieve n=120 for improving the statistical significance of the study and ease of calculation

#### **Inclusion criteria /Exclusion criteria:**

Males and females, 18 – 65 years of age, who were willing to give informed written consent. Patients with intellectual disabilities or any prior psychiatric illness; those diagnosed with any other comorbid organic brain conditions were excluded.

#### **Data collection:**

Prior permission of Institutional Ethics Committee was taken to start the study. Also, prior written informed consent from participants was taken. All COVID-19 positive patients admitted in Tertiary Care Hospital were enrolled after confirming Inclusion and exclusion criteria. Participants were interviewed and asked to answer properly to the questions given to them after assuring them about their confidentiality. Patients were screened using the above tools and diagnosis was made according to The Diagnostic and Statistical Manual of Mental Disorders (DSM-5). Then patients were called telephonically after 2 months and again assessed by using the same tools.

#### **Measures:**

Socio-demographic data-sheet, Beck Depression Inventory- II (BDI-II) for assessing



depression, Hamilton Anxiety Rating Scale (HAM-A) for assessing anxiety, World Health Organization Quality of Life Instruments (WHOQOL-BREF) for assessing Quality of Life were used by clinician.

#### Beck Depression Inventory- II (BDI-II):

The BDI-II can be self-administered or verbally by a trained administrator, is validated for completion by 13- to 80-year-old individuals.[24] The Self-report study based on the symptoms described by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) [25], which makes measuring depressive severity possible. BDI-II contains 21 items in which four response options are available on a scale of 0 to 3.

#### Hamilton Anxiety Rating Scale (HAM-A):

The HAM-A scale contains 14 items. Each item consists cluster of symptoms and each item is marked on a scale of 0 to 4, total score being 0–56. HAM-A measures both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical symptoms of anxiety)[26].

#### World Health Organization Quality of Life Instruments (WHOQOL-BREF):

The validated WHOQOL-BREF is used to measure Quality of Life. It contains 24 items which assess quality of life perception in four domains. The four domains are physical health, social

relationships domain, environmental domain and psychological health. There are also two items on overall QOL and general health present. After scoring, the domain scores are converted into a linear scale of 0 and 100. A higher score indicated a better QOL. WHOQOL-BREF has shown to display good discriminant validity, content validity and test-retest reliability [27].

#### Statistical Analysis

Statistical analysis was done using MS excel 2013 version and SPSS trial version 25. Data analysis was done and mean, standard deviation was calculated. The values  $P < 0.05$  was considered statistically significant.

## II. RESULTS

Present study had 110 participants. The mean age of the patients was  $45.06 \pm 13.24$  years. Age group distribution of the patients showed that the minimum age of patients was 21 years and maximum age was 65 years and as shown in **Table-1**, 39.1% patients were female and 60.9% patients were male. Most of the participants (70.9%) were married and around 73% patients were educated more than 10<sup>th</sup> standard. Mostly around 94% patients belonged to socio-economic status class 1. Socio-demographic variables were not associated with depression, anxiety or QOL.

Table -1. Socio-Demographic Data

Socio-Demographic Variable (n=110)		Frequency	Percentage
Gender	Female	43	39.1
	Male	67	60.9
Marital Status	Married	78	70.9
	Unmarried	19	17.3
	Widow	8	7.3
	Widower	4	3.6
	Single	1	0.9
Education	Primary	6	5.5
	Secondary	23	20.9
	Higher Secondary	33	30.0
	Graduate	45	40.9
	Post Graduate	3	2.7
Socio-economic Status (SES)	SES-I	103	93.6
	SES-II	7	6.4



**Table 2A: Beck Depression Inventory- II in COVID-19 positive patients**

BDI- II (n=110)	During COVID-19 positive Phase Frequency (Percent)	Post COVID-19 positive Frequency (Percent)
Minimal	75 (68.2%)	103 (93.6%)
Mild	22 (20.0%)	7 (6.4%)
Moderate	8 (7.3%)	0 (0%)
Severe	5 (4.5%)	0 (0%)

Table-2A& 2B depict that patient experienced depression during COVID-19 positive phase and resolution of depressive symptoms was seen post COVID (p =0.003).

**Table 2B: Comparison of BDI-II scores during COVID-19 phase and Post COVID-19 phase**

BDI-II (n=110)	Mean	SD	p-value	95% CI of Difference of Means	
				Lower Limit	Upper Limit
During COVID-19 positive Phase	11.00	8.948	0.003	0.863	4.119
Post COVID-19 positive	8.51	3.568			

Table- 3A & 3B depict that patient experienced anxiety during COVID-19 positive phase and resolution of anxiety symptoms was seen post COVID (p =0.012).

**Table 3A: Hamilton Anxiety Rating Scale in COVID-19 positive patients**

HAM-A (n=110)	During COVID-19 positive Phase Frequency (Percent)	Post COVID-19 positive Frequency (Percent)
Mild	96 (87.3%)	110 (100%)
Moderate	11 (10.0%)	0 (0%)
Severe	3 (2.7%)	0 (0%)

**Table 3B: Comparison of HAM-A scores during COVID-19 phase and Post COVID-19 phase**

HAM-A (n=110)	Mean	SD	p-value	95% CI of Difference of Means	
				Lower Limit	Upper Limit
During COVID-19 positive Phase	8.00	7.120	0.012	0.397	3.221
Post COVID-19 positive	6.19	3.521			

**Table 4: Quality of life in COVID-19 positive patients (QOL-BREF):**

Sr No.	Quality of life Domains	Mean (n=110)	Standard Deviation (SD)
1	Physical	57.61	17.298
2	Psychological	60.87	18.774
3	Social Relationships	70.60	17.290
4	Environmental	65.55	16.809



As per **Table 4** social relationship domain had highest while the physical health domain had the lowest scores.

### III. DISCUSSION

The finding of our study showed that 31.8% patients who were COVID-19 positive suffered from depression which is similar to the results found in the study done by Zhang et al. i.e., 29.2% [28]. Zhao et al. [29] conducted a similar study in China and higher prevalence of depression was found in their study (49.06%) for confirmed patients. Similarly, Yu-Fen Ma et al. [30] found prevalence of depression in patients to be 43.1%. However, our study also followed the patients over 3 months and we found out that prevalence of depression to be only 6.4%. It was seen that the symptoms resolved gradually after the infective phase was resolved. Regarding the prevalence of anxiety, our study showed mild, moderate and severe anxiety in 87.3%, 10% and 2.7% respectively as compared to Pankaj et al. study who found higher prevalence of moderate anxiety i.e., 47% and that of mild and severe anxiety to be 35 and 18% respectively.[31] Clara et al. conducted a similar study in Ecuador and they found that 24.2% confirmed patients had anxiety symptoms in their study [32]. We followed up patients after 3 months and found that anxiety symptoms decreased in the patients and 100% patients had minimal anxiety symptoms.

It is generally established that infections are associated with a greater risk of mood disorders [33], and there seems to be a higher risk after severe infections [34]. These findings resemble with the SARS-CoV-1 epidemic findings in which depressive symptoms were found among the infected patients[33,36]. The higher risk of psychological distress could be due to the coronavirus affecting the brain or by releasing cytokine which affects the brain [37]. Similar situations with higher psychological morbidities were also found in the past during the outbreaks of severe acute respiratory syndrome (SARS), H1N1 influenza, Ebola virus, middle east respiratory syndrome (MERS) [38]. There were more psychological problems among the patients compared to healthcare workers or general public which is similar to the previous outbreaks [39]. Most of the patients affected with SARS, MERS or Ebola had at least one of the many psychological morbidities such as depression, anxiety, stress or sleep problems [26,40,41]. The perception of threat, mortality, shame and inequality were some of the major factors responsible for such high burden. Moreover, as there is no definitive

pharmacotherapy or vaccine for COVID-19, so, uncertainty is always present among the patients on the outcome and result which further worsen their psychological well-being. Therefore, following an outbreak, mental health should be an integral part of rehabilitation of patients. More research is required to study the long-term mental health issues in the survivors[42].

Regarding anxiety also, the evidence is more less, and it should be dealt in detail further because anxiety symptoms were reported during [35] and following [43,44] SARS-CoV-1. Furthermore, affective psychosis has been induced by SARS-CoV-1 during the acute phase of the disease [45], but we found no research for the same for SARS-CoV-2. It is already established that severe infections and inflammatory processes can cause delirium as well as encephalopathy. Similar symptoms have been found in SARS-CoV-2 positive patient but the evidence is still scarce [46].

The increased prevalence of anxiety and depression during infective phase is probably due to the uncertainty about the treatment, physical distress such as breathlessness and fatigability, isolation from family members, financial burden, guilt about the infection transmission to their family members, and community stigma.

QOL is associated with the interplay between distressing and protective factors [47]. Depression has a negative impact on the daily functioning and other related domains of the affected individual [48], therefore, it is likely to be negatively related to the QOL, which is confirmed by our study finding that COVID-19 patients with depression have a lower QOL as compared to patients without depressive symptoms. Similar results were found out by Yu-Fen Ma et al [30]. Similar findings were also found in other diseases, such as diabetes [49], coronary arterial diseases [50], pulmonary diseases [51], and gastrointestinal diseases [52].

### IV. CONCLUSION

High prevalence of anxiety, depression in patients of covid demands screening during admission and psychiatric treatment measures in Treatment protocol of covid 19.

**ACKNOWLEDGEMENTS-None.**

**CONFLICTS OF INTEREST-** 'The Authors declare that there is no conflict of interest'

### REFERENCES



- [1]. Shereen MA, Khan S, Kazmi A, Bashir N, Siddique R. COVID-19 infection: Origin, transmission, and characteristics of human coronaviruses. *J Adv Res.* 2020; 24: 91–98. <https://doi.org/10.1016/j.jare.2020.03.005> PMID: 32257431
- [2]. Galante O, Avni YS, Fuchs L, Ferster OA, Almog Y. Coronavirus NL63-induced Adult Respiratory Distress Syndrome. *Am J Respir Crit Care Med.* 2015; 193: 100–101. <https://doi.org/10.1164/rccm.201506-1239LE> PMID: 26720790
- [3]. Kanwar A, Selvaraju S, Esper F. Human Coronavirus-HKU1 Infection Among Adults in Cleveland, Ohio. *Open Forum Infect Dis.* 2017; 4. <https://doi.org/10.1093/ofid/ofx052> PMID: 28616442
- [4]. Cascella M, Rajnik M, Cuomo A, Dulebohn SC, Di Napoli R. Features, Evaluation and Treatment Coronavirus (COVID-19). *StatPearls.* Treasure Island (FL): StatPearls Publishing; 2020.
- [5]. 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. *Lancet Psychiatry.* 2020; 7: 228–229. [https://doi.org/10.1016/S2215-0366\(20\)30046-8](https://doi.org/10.1016/S2215-0366(20)30046-8) PMID: 32032543
- [6]. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The Lancet.* 2020; 395: 497–506. [https://doi.org/10.1016/S0140-6736\(20\)30183-5](https://doi.org/10.1016/S0140-6736(20)30183-5) PMID: 31986264
- [7]. Sanders J, Monogue M, Jodlowski T, Cutrell J. Pharmacologic treatments for Coronavirus Disease 2019 (COVID-19) *JAMA.* 2020 doi: 10.1001/jama.2020.6019.
- [8]. Cheng V, Wong S, Chuang V, So S, Chen J, Sridhar S, et al. The role of community-wide wearing of face mask for control of coronavirus disease 2019 (COVID-19) epidemic due to SARS-CoV-2. *Journal of Infection.* 2020 doi: 10.1016/j.jinf.2020.04.024.
- [9]. Sahu D, Agrawal T, Rathod V, Bagaria V. Impact of COVID 19 lockdown on orthopaedic surgeons in India: A survey. *Journal of Clinical Orthopaedics and Trauma.* 2020 doi: 10.1016/j.jcot.2020.05.007.
- [10]. Chetterje P. Gaps in India's preparedness for COVID-19 control. *The Lancet Infectious Diseases.* 2020;20(5):544. doi: 10.1016/s1473-3099(20)30300-5.
- [11]. Hall R, Hall R, Chapman M. The 1995 Kikwit Ebola outbreak: Lessons hospitals and physicians can apply to future viral epidemics. *General Hospital Psychiatry.* 2008;30(5):446–452. doi: 10.1016/j.genhosppsych.2008.05.003.
- [12]. Selye H. *The stress of life.* New York: McGraw-Hill; 1956.
- [13]. Holland K. *Anxiety: Causes, Symptoms, Treatment, and More* [Internet]. Healthline. 2020 [cited 17 September 2021]. Available from: <https://www.healthline.com/health/anxiety>.
- [14]. Goyal K, Chauhan P, Chhikara K, Gupta P, Singh M. Fear of COVID 2019: First suicidal case in India! *Asian Journal of Psychiatry.* 2020;49:101989. doi: 10.1016/j.ajp.2020.101989.
- [15]. Mamun M, Griffiths M. First COVID-19 suicide case in Bangladesh due to fear of COVID-19 and xenophobia: Possible suicide prevention strategies. *Asian Journal Of Psychiatry.* 2020;51:102073. doi: 10.1016/j.ajp.2020.102073.
- [16]. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho C, Ho R. Immediate psychological responses and associated factors during the initial stage of the 2019 Coronavirus Disease (COVID-19) epidemic among the general population in China. *International Journal of Environmental Research and Public Health.* 2020;17(5):1729. doi: 10.3390/ijerph17051729
- [17]. Qiu J, Shen B, Zhao M, Wang Z, Xie B, Xu Y. A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: Implications and policy recommendations. *General Psychiatry.* 2020;33(2):e100213. doi: 10.1136/gpsych-2020-100213.
- [18]. Shah K, Kamrai D, Mekala H, Mann B, Desai K, Patel RS. Focus on Mental Health During the Coronavirus (COVID-19) Pandemic: Applying Learnings from the Past Outbreaks. *Cureus.* 2020 [cited 7 Apr 2020]. <https://doi.org/10.7759/cureus.7405> PMID: 32337131
- [19]. Dong L, Bouey J. Early Release—Public Mental Health Crisis during COVID-19 Pandemic, China—Volume 26, Number 7—July 2020—Emerging Infectious Diseases journal—CDC. 2020 [cited 30 Mar 2020]. <https://doi.org/10.3201/eid2607.200407> PMID: 32202993
- [20]. Goyal K, Chauhan P, Chhikara K, Gupta P, Singh MP. Fear of COVID 2019: First



- suicidal case in India! *Asian J Psychiatry*. 2020; 49: 101989. <https://doi.org/10.1016/j.ajp.2020.101989> PMID: 32143142
- [21]. Kluge HNP. Statement e physical and mental health key to resilience during COVID-19 pandemic. <http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/statements/statement-physicaland-mental-health-key-to-resilience-during-covid-19-pandemic> (accessed on 30th March, 2020).
- [22]. Depoux A, Martin S, Karafillakis E, Bsd RP, Wilder-Smith A, Larson H. The pandemic of social media panic travels faster than the COVID-19 outbreak. *J Trav Med* 2020. taaa031.
- [23]. Daniel WW (1999). *Biostatistics: A foundation for analysis in health sciences*. 7<sup>th</sup> edition. New York: John Wiley and sons
- [24]. Beck A, Steer R, Brown G. *Beck Depression Inventory*. Second ed San Antonio, TX, E.U.: Psychological Corporation; 1996
- [25]. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. 4th ed text revision. Washington, DC: American Psychiatric Association; 2000.
- [26]. Hamilton M. The assessment of anxiety states by rating. *Br J Med Psychol* 1959; 32:50–55
- [27]. World Health Organization (1996) WHO-BREF: Introduction, administration, scoring and generic version of the assessment. 1996. Geneva: WHO
- [28]. Zhang J, Lu H, Zeng H, et al. The differential psychological distress of populations affected by the COVID-19 pandemic. *Brain Behav Immun* [Internet]. 2020 Apr 15;(January):19–21.
- [29]. Zhao Q, Hu C, Feng R, et al. Anxiety, depression and physical symptoms in patients with novel coronavirus pneumonia[J]. *Chinese Journal of Neurology*, 2020,53 (06): 432-436. DOI: 10.3760/cma.j.cn113694-20200220-00102
- [30]. Ma Y, Li W, Deng H, Wang L, Wang Y, Wang P et al. Prevalence of depression and its association with quality of life in clinically stable patients with COVID-19. *Journal of Affective Disorders*. 2020;275:145-148.
- [31]. Kumar P, Chaudhary R, Chhabra S, Bhalla JK. Prevalence of anxiety and depression among COVID-19 patients admitted to tertiary care hospital. *Indian J Soc Psychiatry* 2021;37:88-92
- [32]. Paz C, Mascialino G, Adana-Díaz L, Rodríguez-Lorenzana A, Simbaña-Rivera K, Gómez-Barreno L et al. Anxiety and depression in patients with confirmed and suspected COVID -19 in Ecuador. *Psychiatry and Clinical Neurosciences*. 2020;74(10):554-555.
- [33]. Benros M, Waltoft B, Nordentoft M, Østergaard S, Eaton W, Krogh J et al. Autoimmune Diseases and Severe Infections as Risk Factors for Mood Disorders. *JAMA Psychiatry*. 2013;70(8):812.
- [34]. Köhler O, Petersen L, Mors O, Mortensen P, Yolken R, Gasse C et al. Infections and exposure to anti-infective agents and the risk of severe mental disorders: a nationwide study. *Acta Psychiatrica Scandinavica*. 2016;135(2):97-105.
- [35]. Cheng S, Tsang J, Ku K, Wong C, Ng Y. Psychiatric complications in patients with severe acute respiratory syndrome (SARS) during the acute treatment phase: a series of 10 cases. *British Journal of Psychiatry*. 2004;184(4):359-360.
- [36]. Chua S, Cheung V, McAlonan G, Cheung C, Wong J, Cheung E et al. Stress and Psychological Impact on SARS Patients during the Outbreak. *The Canadian Journal of Psychiatry*. 2004;49(6):385-390.
- [37]. Troyer E, Kohn J, Hong S. Are we facing a crashing wave of neuropsychiatric sequelae of COVID-19? Neuropsychiatric symptoms and potential immunologic mechanisms. *Brain, Behavior, and Immunity*. 2020;87:34-39.
- [38]. Brooks S, Webster R, Smith L, Woodland L, Wessely S, Greenberg N et al. The Psychological Impact of Quarantine and How to Reduce It: Rapid Review of the Evidence. *SSRN Electronic Journal*. 2020;.
- [39]. Lee A, Wong J, McAlonan G, Cheung V, Cheung C, Sham P et al. Stress and Psychological Distress among SARS Survivors 1 Year after the Outbreak. *The Canadian Journal of Psychiatry*. 2007;52(4):233-240..
- [40]. Keita M, Taverne B, Sy Savané S, March L, Doukoure M, Sow M et al. Depressive symptoms among survivors of Ebola virus disease in Conakry (Guinea): preliminary results of the PostEboGui cohort. *BMC Psychiatry*. 2017;17(1).
- [41]. Jeong H, Yim H, Song Y, Ki M, Min J, Cho J et al. Mental health status of people



- isolated due to Middle East Respiratory Syndrome. *Epidemiology and Health*. 2016;38:e2016048.
- [42]. Krishnamoorthy Y, Nagarajan R, Saya G, Menon V. Prevalence of psychological morbidities among general population, healthcare workers and COVID-19 patients amidst the COVID-19 pandemic: A systematic review and meta-analysis. *Psychiatry Research*. 2020;293:113382.
- [43]. CHENG S, WONG C, TSANG J, WONG K. Psychological distress and negative appraisals in survivors of severe acute respiratory syndrome (SARS). *Psychological Medicine*. 2004;34(7):1187-1195..
- [44]. Wu K, Chan S, Ma T. Posttraumatic stress, anxiety, and depression in survivors of severe acute respiratory syndrome (SARS). *Journal of Traumatic Stress*. 2005;18(1):39-42.
- [45]. Lee D, Wing Y, Leung H, Sung J, Ng Y, Yiu G et al. Factors Associated with Psychosis among Patients with Severe Acute Respiratory Syndrome: A Case-Control Study. *Clinical Infectious Diseases*. 2004;39(8):1247-1249.
- [46]. Kotfis K, Williams Roberson S, Wilson J, Dabrowski W, Pun B, Ely E. COVID-19: ICU delirium management during SARS-CoV-2 pandemic. *Critical Care*. 2020;24(1).
- [47]. VORUGANTI L, HESLEGRAVE R, AWAD A, SEEMAN M. Quality of life measurement in schizophrenia: reconciling the quest for subjectivity with the question of reliability. *Psychological Medicine*. 1998;28(1):165-172.
- [48]. Singleton SS. Depression and quality of life: a patient's perspective. *J Clin Psychiatry*. 2001;62 Suppl 26:22. PMID: 11775089.
- [49]. Eren İ, Erdi Ö, Şahin M. The effect of depression on quality of life of patients with type II diabetes mellitus. *Depression and Anxiety*. 2008;25(2):98-106.
- [50]. Ruo B, Rumsfeld J, Hlatky M, Liu H, Browner W, Whooley M. Depressive Symptoms and Health-Related Quality of Life. *JAMA*. 2003;290(2):215.
- [51]. Gudmundsson G, Gislason T, Janson C, Lindberg E, Suppli Ulrik C, Brøndum E et al. Depression, anxiety and health status after hospitalisation for COPD: A multicentre study in the Nordic countries. *Respiratory Medicine*. 2006;100(1):87-93.
- [52]. Sainsbury K, Mullan B, Sharpe L. Reduced quality of life in coeliac disease is more strongly associated with depression than gastrointestinal symptoms. *Journal of Psychosomatic Research*. 2013;75(2):135-141.