

# Long Term Impact of COVID-19 Infection on Sleep and Mental Health

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## ABSTRACT

**Aim :** To determine the long term impact of covid-19 infection on sleep and mental health.

**Study design:** Cross-sectional study

**Place and duration of study:** Department of Psychiatry, Ghulam Mohammad Mahar Medical College Sukkur from 1<sup>st</sup> April 2021 to 30<sup>th</sup> September 2021.

**Methodology:** Fifty patients were enrolled after their positivity confirmation of coronavirus-19 through nasal swab test polymerase chain reaction. Categorization was done on the basis of disease severity. HRCT was performed for complete chest examination and grading of covid-19. Other laboratory tests were also done for day to day assessment of patient. Patients after their recovery were asked to follow up after six months of their disease. The demographic, gender, clinical history and clinical record were documented on a well-structured questionnaire. Co-morbidities associated were also recorded. Sleep and mental health were assessed by Pittsburgh sleep quality index. This assessment tool is used to identify sleep disturbances. The scoring techniques use seven sub scores ranging between 0-3.

**Results:** The mean age was 49.56±12.2 years with almost equal males and females. In 66% of the participants of severe group and critical group were suffering from poor sleep quality followed by non severe group. Phobic anxieties were more common in non-severe and severe cases while paranoid ideation was normal in severe cases but at borderline in critical cases. Paranoid ideation was more common in married as well as single patients.

**Conclusion:** Corona virus badly influences normal sleep cycle and also leads towards various mental and psychological disorders.

**Keywords:** Pittsburgh sleep quality index; COVID-19; Disease severity; Psychological disturbance

## INTRODUCTION

Corona virus disease is declared as pandemic in 2020 when it spread in several region of the world.<sup>1</sup> It gets transfer from person to person and transmitted globally by travelers and caused approximately 1 million deaths worldwide.<sup>2</sup> Psychological consequences have been extensively reported after certain pandemics including Ebola, H1N1 and severe acute respiratory syndrome.<sup>3-6</sup> Results of meta-analysis reported the incidence of psychiatric disorders after infections such as MERS and SARS outbreaks highlighted that COVID-19 can also leads to depression, anxiety, manic symptoms, delirium, insomnia and memory loss.<sup>7</sup> Effect of corona virus on mental health has also been developed since early stages.<sup>6</sup>

Psychological diseases have also been reported in COVID-19 survivors as they were facing extreme challenges of survival, fear to infect other people especially family members, recurrent infections, related comorbidities and high risk of death at any time. Biological factors are also involved in the progression of COVID-19 related mental disorders that further associated and exacerbate the inflammation process and gets involved in the development of mental ailments.<sup>8</sup> Relation between COVID-19 and related psychological disorders is still a matter of debate either the corona virus itself increases the risk of mental diseases or worsen the already present condition.

Increased risk of depression, anxiety and fear were reported in many studies in SARS-CoV-2 patients as compared to other participants. Various studies also recommend nation-wide and large multi-center studies to deeply assess the long term effects of COVID-19 on mental health.<sup>9,10</sup> Present study is aimed to evaluate the long term influence of corona virus on mental health.

This study was also tried to find out the associated risk factors on sleep for the detection of relationship between COVID-19 and mental disorders.

## MATERIALS AND METHODS

This cross-sectional study was conducted at Department of Psychiatry, Ghulam Mohammad Mahar Medical College Sukkur from 1<sup>st</sup> April 2021 to 30<sup>th</sup> September 2021. Each participant of the study gave their consent of participation on a written document. There were 50 patients enrolled after their positivity confirmation of coronavirus 19 through nasal swab test polymerase chain reaction.

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Each patient was categorized either as critical, severe or non-critical depending upon their condition. In cases where respiratory support including ventilator was required was termed as critical, while severe was one having <300mm Hg pressure and oxygen saturation >50. While those who were not critical or severe were termed as non-critical cases. In the present study patient study enrolment was done post 28 days survival. HRCT was performed for complete chest examination and grading of covid 19. Other laboratory tests were also done for day to day assessment of patient. Patients after their recovery were asked to follow up after six months of their disease. The demographic, gender, clinical history and clinical record were documented on a well-structured questionnaire. Co-morbidities associated were also recorded. Sleep and mental health were assessed by Pittsburgh sleep quality index. This assessment tool is used to identify sleep disturbances. The scoring techniques use seven sub scores ranging between 0-3. On adding the sub scores total scores ranges from 0-21. Any score higher than five defines as poor sleep quality. Post traumatic disorder checklist for DSM-5 was also used which reports 20 self reporting items measuring post traumatic stressful disorders. This uses the criteria of DSM-5. The cut off used in this tool is 33. Symptom checklist 90 "SCL 90 is a questionnaire based tool which assesses the psychological issues with a scoring between 0-4. It has an additional 9 sub scales including somatizations, depression, obsessiveness, compulsive, anxiety, phobias and interpersonal-sensibility. Data was analyzed by using SPSS version 26.0 using chi square and odds ratio tools where p value <0.05 was taken as significant.

## RESULTS

The mean age was 49.56±12.2 years with almost equal males and females. However, within groups there were more females in non severe cases while more males in severe cases. Majority 66% of the enrolled patients were married (Table 1). It was noticed in 66% of the participants of severe group and critical group followed by non severe group. Anxiety and depression was also appeared to be a prominent determinant as it was cleared from the present study (Table 2).

Phobic anxieties were more common in non-severe and severe cases while paranoid ideation was normal in severe cases but at borderline in critical cases. Psychosis cases were most frequent in critical patients followed by non-severe cases (Fig. 1). In the present study there was a significant variance in phobic anxiety, paranoid ideation and psychosis female odds ratio. On basis of age a significant difference could be seen between various psychological conditions. Paranoid ideation was more common in married as well as single patients (Table 3).

Table 1: Demographic characteristics of patients

Variable	Total of cases (N=50)	Non-severe group (N=32)	Severe group (N=12)	Critical group (N=6)	P-value
Age (Years)	49.56±12.2	36.5±10.2	55.2±16.1	57±10.5	<0.0001
<b>Gender</b>					
Male	26 (52%)	15 (46.8%)	7(58.3%)	4(66.6%)	0.273
Female	24 (58%)	17 (53.1%)	5 (41.6%)	2 (33.3%)	
<b>Marital status</b>					
Single	10 (20%)	7 (21.8%)	2(16.6%)	1 (16.6%)	0.038
Married	33 (66%)	20 (62.5%)	9(75%)	4 (66.6%)	
Divorce	3(6%)	3 (9.3%)	0(0%)	0 (0%)	
Widow	4 (8%)	2 (6.25%)	1 (8.3%)	1(16.6%)	

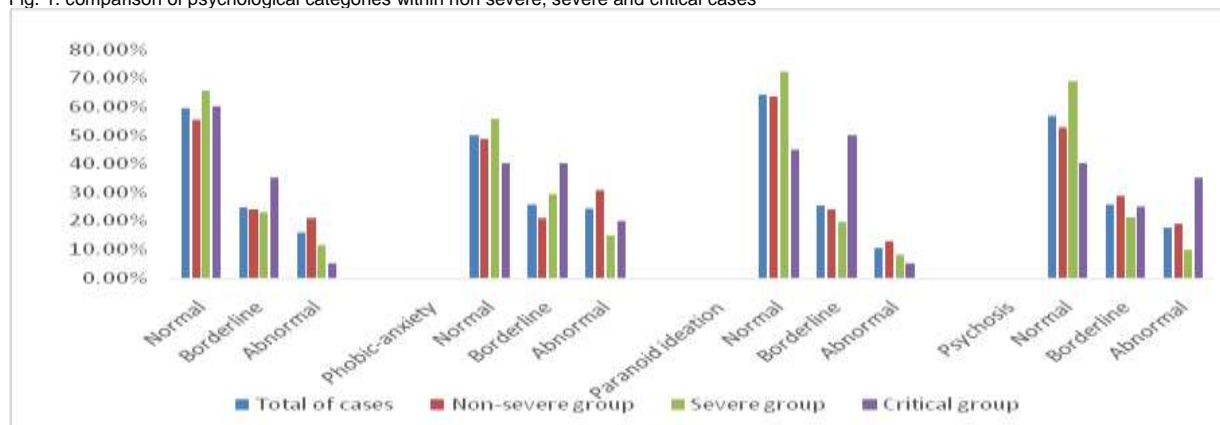
Table 2: Poor sleep quality in study group was observed

Variable	Total of cases (N=50)	Non-severe group (N=32)	Severe group (N=12)	Critical group (N=6)	P-value
<b>PSQI</b>					
Good sleep quality	18(26%)	11 (34%)	4 (33%)	3 (50%)	0.988
Poor quality of sleep	32(64%)	20 (62.5%)	8 (66%)	4 (66%)	
<b>PCL-5</b>					
No PTSD	35(70%)	23 (71%)	8 (66%)	4 (66%)	0.217
Probable PTSD	15(30%)	9 (28.1%)	4 (33%)	2 (33%)	
<b>Somatization</b>					
Normal	9(18%)	5 (15%)	3(25%)	1 (16.6%)	0.026
Borderline	16 (32%)	10 (31%)	4(33%)	2 (33%)	
Abnormal	25(50%)	17 (53.1%)	5(41.6%)	3 (50%)	
<b>Depression</b>					
Normal	33(66%)	22 (68.7%)	7(58.3%)	4 (66%)	0.764
Borderline	12(24%)	7 (21.8%)	4 (33%)	1 (16.6%)	
Abnormal	5(10%)	3 (9.3%)	1 (8.3%)	1 (16.6%)	
<b>Anxiety</b>					
Normal	21(42%)	13 (40%)	6 (50%)	2 (33%)	0.143
Borderline	17(34%)	11 (34.3%)	4 (33%)	2 (33%)	
Abnormal	12(24%)	8(25%)	2 (16.6%)	2 (33%)	

Table 3: Comparison of various psychological conditions

Variable	Phobic anxiety		Paranoid-ideation		Psychosis	
	Odds ratio	P value	Odds ratio	P value	Odds ratio	P value
<b>Gender</b>						
Female	3.2	<b>0.027</b>	3.18	<b>0.026</b>	3.30	<b>0.023</b>
<b>Age (years)</b>						
18 -30	0.15	<b>0.002</b>	0.123	<b>0.001</b>	0.421	0.17
31 -60	0.31	<b>0.01</b>	0.262	<b>0.017</b>	0.362	0.07
<b>Marital status</b>						
Single	0.19	0.17	0.13	<b>0.03</b>	0.44	0.331
Married	0.16	0.097	0.14	<b>0.04</b>	0.71	0.665
Divorce	0.67	0.78	0.58	0.63		

Fig. 1: comparison of psychological categories within non severe, severe and critical cases



## DISCUSSION

Corona virus is declared as largest pandemic of 21<sup>st</sup> century. It caused widespread infection, cause innumerable health complications and millions of death in all over the globe. Many international studies have been conducted to assess psychological impact of COVID-19 on this pandemic survivors, general

population and in post corona patient.<sup>3-5,11-16</sup> Present study is specifically designed for the determination of impact of COVID-19 on mental health its associated risk factors that put great stress on mental health which leads and exacerbates comorbidities and other ailments. In present study, 66% of the severe group was suffering from sleep deprivation or poor sleep quality.

During corona virus pandemic, a study was conducted in Egypt to find the incidence of obsessive compulsive disorder and anxiety among health care workers and in general population. Higher frequency of insomnia, depression and sleep disorders were found.<sup>17</sup> Anxiety appeared to be the most common symptoms reported by many patients. Many factors were associated with anxiety including lack of family, inability to communicate, social deprivation, quarantine and higher probability of mechanical ventilation removal.<sup>18</sup> Psychosis was also found to be a prominent determinant. Level of IgG for 2 COVID strains (NL63 and HKU1) was significantly reported in those individuals<sup>19</sup>.

Result of the present study would prove substantial effect but larger sample size needs to be conducted for further validation of results. Moreover, COVID-19 badly impacts on mental health of corona survivors through socially, economically and even on their private life. This study proves that; corona virus has unique effect on mental health of the patients extending upto 6 months after recovery.

## CONCLUSION

COVID-19 is significantly associated with long term complications and implications of mental health and normal sleep patterns. Large scale multi-center study needs to be conducted for better understanding and prediction of associated and contributing risk factors.

**Conflict of interest:** Nil

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