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# THE DIRECT IMPACT THAT COVID-19 HAS ON NEUROLOGICAL IMBALANCES AND PSYCHOLOGICAL.

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**Abstract:**

This study aims to investigate the effect of COVID-19 on neurological and psychological disorders, as 100 patients were collected from Al-Hussein Teaching Hospital located in Thi-Qar Governorate - Iraq.
The electronic record in the hospital was used for the purpose of determining information and demographic data for patients. The sample included both patients who had previously been diagnosed with mental disorders as well as patients whose mental disorders developed against the background of infection with the Coronavirus (delirium, neurocognitive disorders, neurological disorders, stress-related disorders).
By adopting the statistical analysis program IBM SPSS SOFT, the MEAN± SD for the ages of the first group was (40.23 ± 7.7), while for the ages of the second group (43.2 ± 10.3) And the following results were found for patients with ischemic stroke (12%): plexus disorders (10%), in addition to (Mood disorder 18.9%) and (Parkinsonism18%), and statistical significance was found between the two groups with 0.001

**Keywords:** Haemorrhage, CV-19, mild, Severity, neurological

## INTRODUCTION

Confusion or delirium is a common symptom in patients hospitalized with coronavirus during the acute phase of the disease, and 1 in 3 patients suffers from depression and anxiety disorders. These are some of the conclusions of a systematic review recently published in science medicine journals [1,2,3].
With regard to mental disorders, according to a meta-analysis, during the acute phase of the disease, the most common symptoms in hospitalized patients include depressive disorders (32.6%), anxiety (35.7%), and mental problems [4,5,6,7]. 41.9%). Similarly, 29.4% show emotional lability, 4.9% irritability, and 7.4% show aggressive behavior. Alternatively, some studies have reported symptoms of steroid-induced psychosis and mania, such as euphoria (7.8%), slurred speech (20.6%), auditory hallucinations (4.7%), persecutory thoughts (3, 9%) or visual hallucinations (2%). [8,9]
Similarly, some studies also report suicidal behavior in 2% of hospitalized patients [10,11].
The COVID-19 pandemic is a serious challenge for the healthcare system, requiring it to adapt to new conditions and problems [12]. Coronavirus infection is associated with significant psychological distress [13]. When infected with the SARS-CoV-2 virus, there is a high probability of not only the development of mental disorders but also a deterioration in the mental state of patients with initially existing mental illnesses, which is noted in 20.9% of cases [ 14]. A study conducted on 153 patients with COVID-19 aged 23 to 94 years showed that 31% of those examined had mental disorders, with 49% of patients with mental disorders were younger than 60 years and 51% were older than

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60 years. In the structure of mental disorders, 43% were new-onset psychoses, 26% were neurocognitive (dement-like) syndromes, and 17% were affective disorders [15]. At each stage of the disease process, the proportion of individual mental disorders is different. If in the acute period confusion, depression, anxiety, memory impairment, insomnia, steroid-induced mania dominated [5], then during the convalescence period, a high prevalence of post-traumatic stress disorder, depression, anxiety, insomnia, and obsessive-compulsive symptoms were revealed [6]. It is known that the main cause of death in a new coronavirus infection is severe acute respiratory syndrome as a result of an exacerbated inflammatory response, accompanied by uncontrolled oxidative stress, as well as an inflammatory response at the level of the lungs [7]. It turned out that comorbidities contribute to the poor outcome. Thus, at least one comorbidity was present in 73.8% of patients, and 26.7% had at least three comorbidities. The most common comorbidities were hypertension (51.2%), chronic heart disease (23.3%), diabetes mellitus (21.8%), chronic lung disease excluding asthma (17.9%), and obesity. (13.8%). Only 0.7% of patients were infected with HIV [8]

## MATERIAL AND METHOD

### Patient sample

A retrospective study was conducted in Al-Hussein Teaching Hospital located in Thi-Qar Governorate – Iraq on patients with coronavirus, and neuropsychiatric effects, where 100 patients were collected, and the criteria in which the study was included are as follows

1. Age over 20 years old
2. clinical signs of COVID-19,
3. Mental and psychological disorders

### Study design

Demographic information and data were collected based on the hospital's electronic record and were statistically analyzed using spss soft and Microsoft Excel, where 100 patients were collected, and the patients were distributed by gender: 60 males and 40 women

The severity of infection with the new coronavirus was determined according to interim guidelines. The sample included both patients with previously diagnosed mental disorders as well as patients whose mental disorders developed on the background of coronavirus infection (delirium, neurocognitive disorders, neurotic, stress-related disorders).

### Study period

After obtaining the necessary approvals required from the Ministry of Health, the study period was six months, from 6-9-2020 to 10-09-2021

### Aim of research

This paper aims to knowledge The direct impact that COVID-19 has on neurological imbalances and psychological

## RESULTS

**Table 1-** demographic results of patients

| P | G 1 patient (100) | G2(50) |
|---|---|---|
| age | | |
| Age | 40.23±7.7 | 43.2±10.3 |
| Age female | 41.3±6.5 | 41.1±9.9 |
| Age male | 40.5±8.2 | 40.1±11.1 |
| Sex | | |
| Male | 60 | 37 |
| Female | 40 | 13 |
| BMI | | |
| MALE (mean SD) | 26.2±4.9 | 24.3±4.1 |
| Female (mean sd) | 26.77±4.5 | 24.9±3.8 |

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| Comorbidities | | |
|---|---|---|
| Asthma | 15 | 10 |
| T2D | 25 | 30 |
| Hypertension | 30 | 22 |
| IHD | 10 | 14 |
| Other | 20 | 38 |

**Fig 1-** p-value of demographic results

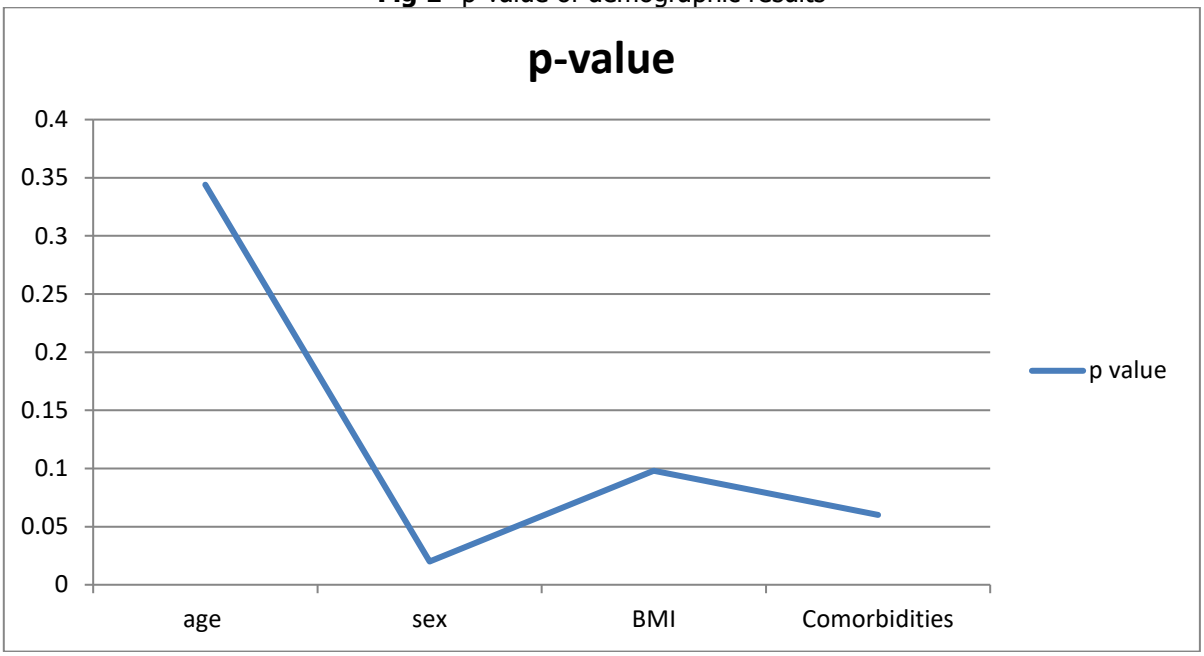


**Table 2**- Severity of the mental disorder

| P | G1 | G2 |
|---|---|---|
| Significant (N) | --- | 20% |
| mental disorders (severe mental condition) (N) | 19% | 5% |
| extremely severe mental condition(N) | 55 | 33% |
| moderate mental disorders(N) | 26% | 32% |
| Severity of coronavirus Responsibility from 10 score | | |
| severe | 7.7±1.7 | 6.6±1.3 |
| Moderate | 4.2±1.2 | 3.1±0.9 |
| mild | 1.9±0.9 | 0.8±0.7 |

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**Table 3**- outcomes of results

| P | G1 | G2 |
|---|---|---|
| Ischaemic stroke | 12% | 3% |
| plexus disorders | 10% | 9% |
| Encephalitis | 12% | 6 |
| Insomnia | 12.3% | 13% |
| Intracranial haemorrhage | 13.9% | 8.8% |
| Mood disorder | 18.9% | 14% |
| Anxiety | 35% | 11.3% |
| Parkinsonism | 18% | 12% |

**Fig 2**- predictive value of Probability of survival, %

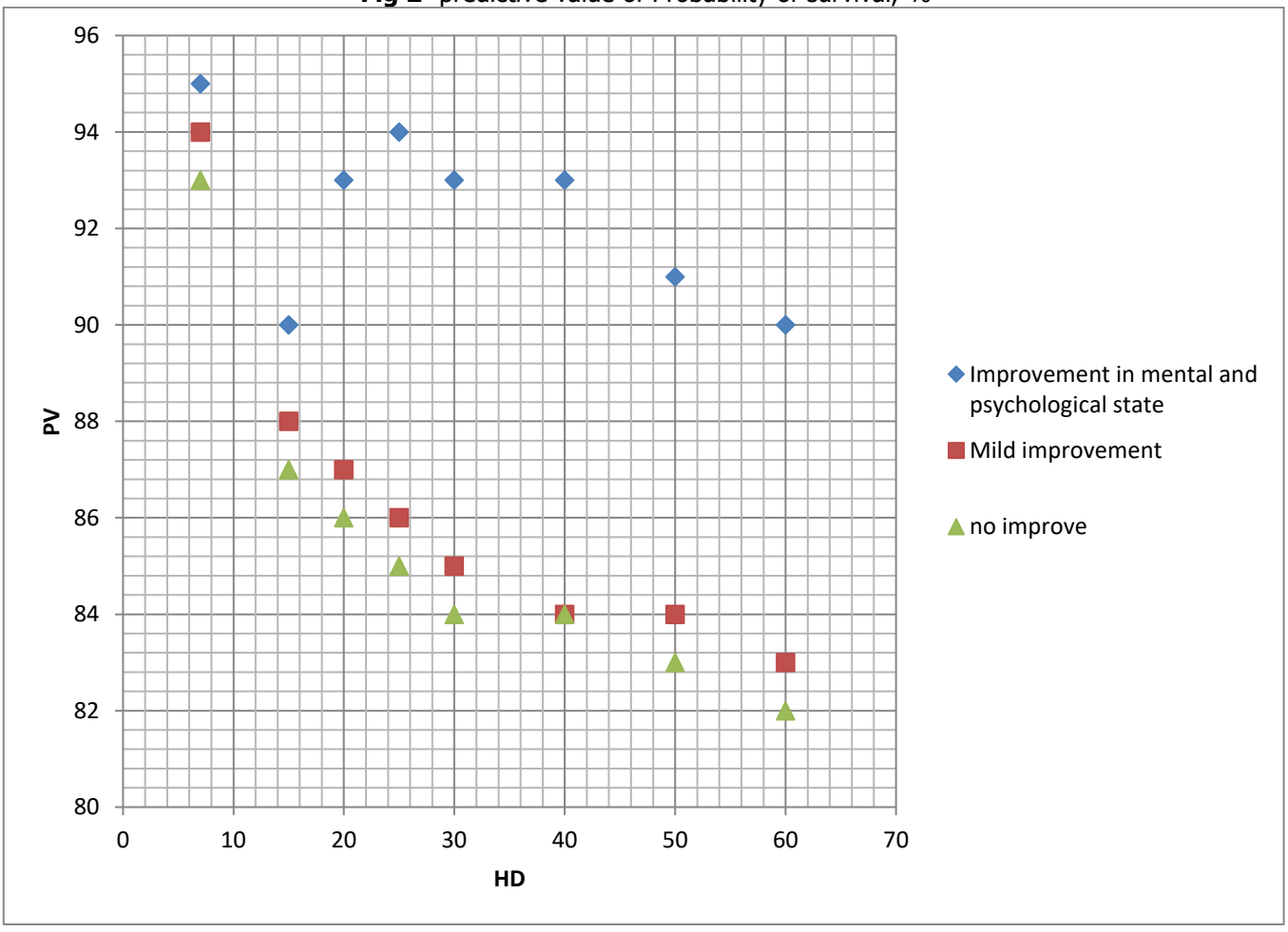

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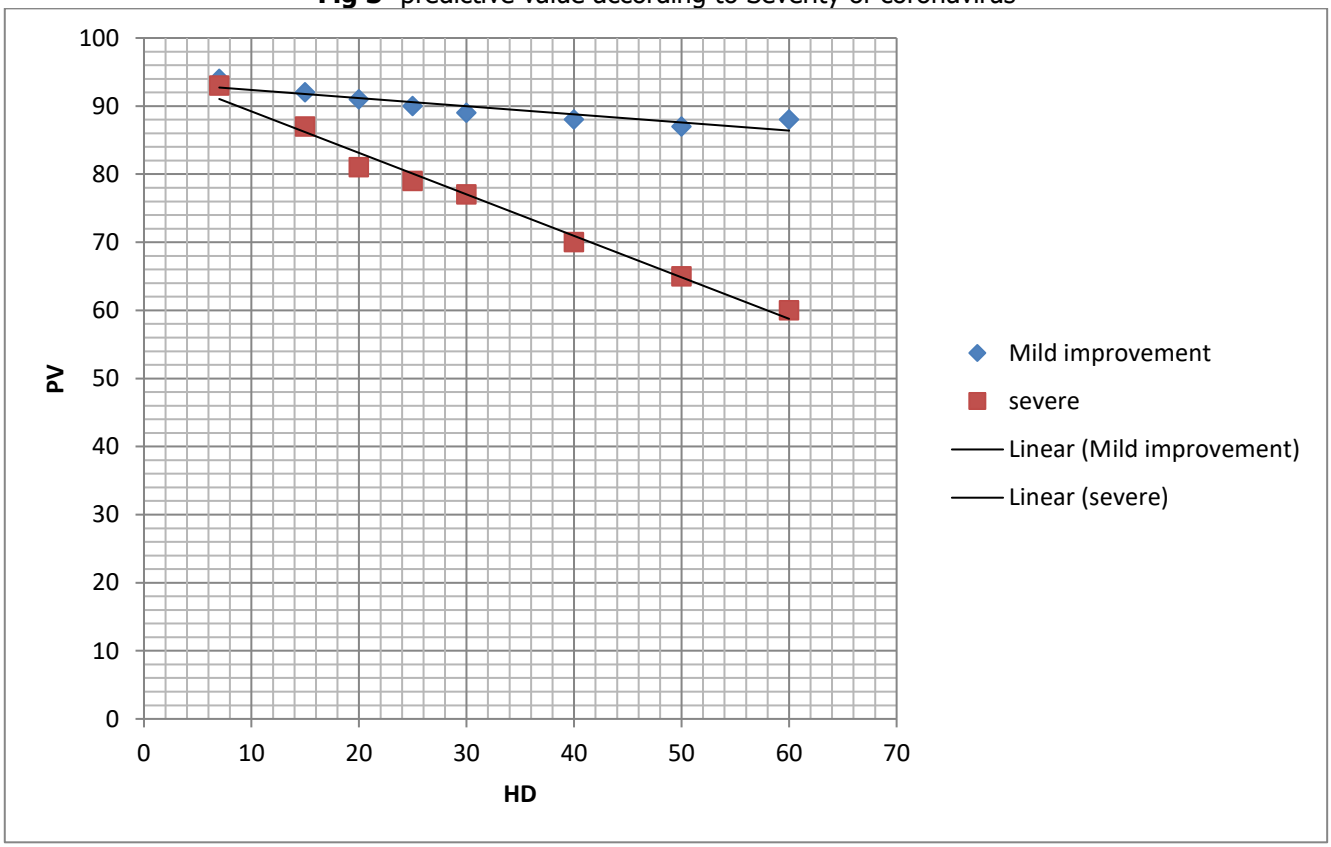
**Fig 3**- predictive value according to Severity of coronavirus




## DISCUSSION

One hundred patients were collected from Al-Hussein Teaching Hospital located in Thi-Qar Governorate - Iraq, and through the statistical analysis program to analyze data and demographic information about the disease, the mean value of ages was 40.23 ± 7.7 As for the second group, the mean value of ages was 43.2 ± 10.3, and the patients were distributed according to sex (60 males, 40 women). As for the second group, the patients were distributed according to gender (37 males and 13 women).

The mental health of the general population and some vulnerable population groups may be significantly affected by the COVID-19 pandemic as a result of high levels of stress.

COVID-19 can affect society as a whole, and it has psychosocial consequences for individuals who feel stressed and anxious. The pandemic and the control measures being taken can spread fear among the population and can lead to social stigmatization of patients

The results showed that 30% of the population consulted showed symptoms of anxiety and 35% of depression

angiotensin-converting enzyme 2, or ACE2. ACE2 is a molecule that the coronavirus uses to enter cells on the surface of blood vessels.

For example, a rapid review published in The Lancet Neurology indicated that severe acute respiratory syndrome coronavirus (SARS) may be more likely to cause thrombotic events.

The study - conducted by researchers at Georgia State University and the Georgia Institute of Technology - showed that "the decrease in the volume of gray matter in this region of the brain is associated with the emergence of an imbalance in some cognitive functions, such as forgetfulness, loss of focus, poor awareness, confusion and disorder among Covid-19 patients, even Six months after discharge from the hospital.

Previous studies have focused on how the brain is affected by COVID-19 using a univariate approach, and a data-driven, multivariate approach has been used to correlate these changes with characteristics such as fever, hypoxia, level of disability, and brainstem.

Patients with agitation or agitation showed reduced gray matter in the "superior frontal, medial, and middle" gyrus compared to those without agitation,

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and it could be argued that changes in gray matter in the frontal region of the brain may underlie mood disorders. Usually seen in COVID-19 patients
This respiratory virus affects the temporal lobe of the brain, which plays a prominent role in processing sensory input and memory, and thus has implications for patients' moods, which explains why some patients recovering from Covid-19 suffer from mental disorders and depressive symptoms the post-recovery stage.

## CONCLUSION

The study showed that nearly 50% of cases of COVID-19 are accompanied by neurological disorders.

Dizziness, pain, confusion, partial or complete loss of smell and taste, albeit temporary, are symptoms often detected with SARS-CoV-2 and indicate brain disorders. This is a serious problem that affects the further mental state of a person and can cause depression, anxiety, and prolonged memory impairment, as well as significantly increase the risk of stroke. Therefore, it is simply necessary to understand how to treat it in order to prevent complications due to infection.

## RECOMMENDATION

1. The oxygen saturation of the blood must be monitored; Because this may affect in the later stage of recovery some cognitive functions in the brain, especially since some patients may resume home treatment while their oxygen level drops below 92 degrees.
2. Measures taken to reduce the spread of viruses, such as quarantine, may have negative effects on mental health and may lead to symptoms of post-traumatic stress disorder, depression, or insomnia.

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