

## Long-term Complications of COVID19: A Study of Patients' Physiological Trauma

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### Abstract:

**Background:** People throughout the world have been impacted by the COVID-19 epidemic, which poses a serious health risk. COVID-19 is linked to several health issues that can seriously harm a person, including complications with the respiratory, nervous, cardiovascular, gastrointestinal, integumentary, and other body systems. The nurses are better able to track patients while they heal, get rehabilitated, and recover thanks to the assessment of COVID-19-related problems.

**Objectives:** The study's objectives are to evaluate COVID-19 complications among recovered patients and determine the association between COVID-19 complications and patients' demographic information.

**Methods:** To accomplish the study goals, a descriptive retrospective study was conducted as part of the current investigation. From December 15th, 2021, until May 1st, 2022, the study was conducted. In the city of Al-Najaf, the study is being done. a convenience (non-probability) sample of 150 patients with COVID-19 disease. There are 73 women and 84 men among the patients. The information was gathered using a specially designed questionnaire that was divided into three sections: sociodemographic traits, medical history, and the systematic COVID-19 Complication Instrument.

**Results:** The study's findings indicate that even after recovering from COVID-19, the patients continue to experience difficulties. Acute Respiratory Failure (46.5%), Pneumonia (15.35%), Blood Hypercoagulability (35.7%), Diarrhea (33.1%), Myalgia (19.1%), and Arthralgia (15.3%) are the most frequent consequences.

**Conclusion:** The study concluded that COVID-19 is a deadly virus that affects every system of the body and might lead to serious consequences that could endanger the patients' lives.

**Keywords:** COVID-19, Complications, Recovery, Acute Respiratory Failure, Blood Coagulability

### Introduction

Millions of people throughout the world are afflicted by the acute viral infection known as Coronavirus Disease (COVID-19). Furthermore, COVID-19 is an infection of the entire body brought on by the SARS-CoV-2 virus. In December 2019, a severe flu-like illness was reported in Wuhan, Hubei Province, China, and this led to the discovery of SARS-CoV-2. Global health is in jeopardy due to the COVID-19 pandemic, which has an impact on people everywhere. A novel coronavirus identified in January 2020 was eventually given the name SARS-CoV-2.

In February 2020, the World Health Organization (WHO) designated Coronavirus Disease 2019 as "COVID-19" <sup>(1)</sup>. It's a brand-new infection that was first identified in China before spreading to other parts of the world <sup>(2)</sup>. <sup>(3)</sup> COVID-19 has a rapid spread; from 2019 to 2020, it will have reached more than 200 countries

worldwide <sup>(2)</sup>. The virus COVID-19 is a dangerous one that affects every system in the human body <sup>(3)</sup>. As of April 24, 2020, 2.8 million cases with laboratory test verification had been reported in 184 nations.

As a result, COVID-19 has resulted in more than 200,000 fatalities, more than 53,000 of which have happened in the US. Despite the high rates of illness and mortality, research is being done on the effects of the SARS-CoV-2 infection on the nervous system <sup>(4)</sup>. COVID-19 also has an impact on the patient's daily activities and psychological state. As a result, COVID-19 causes significant rates of morbidity and mortality and has an impact on patient's quality of life <sup>(5)</sup>. <sup>(6)</sup>

One of the most important measures of a patient's health is their quality of life about their health <sup>(7)</sup>. Also, while the majority of COVID-19 patients have recovered, some are still dealing with long-term consequences <sup>(8)</sup>.

**Methods:**

**Study design:** To achieve the aforementioned objectives, a descriptive retrospective study was done for the current research. The study ran from May 1st, 2022, until December 15th, 2021.

**Sample of Study:** A non-probability (Purposive) sample of 150 COVID-19 patients living in the AL-Abbasiya district of the Al-Najaf Al-Ashraf Health Directorate were found to have the Corona disease.

**The Study Instrument and Data Collection:** The following tools were used to gather the data: Part I: SICO-DEMOGRAPHICAL FEATURES: This section, which is devoted to acquiring fundamental sociodemographic data, comprises (age, gender, residency, marital status, socio-economic status, and education level). Section 2. Included in the patient's medical history are diabetes, hypertension, lung illness, cancer, and heart disease. Chapter III, which covers the COVID-19 systemic complications

**Data Analyses:** The data are analyzed using the SPSS (Statistical Package for Social Science) version (19) application. The statistical data analysis methods indicated below are used to assess and evaluate the study's findings:

- a- Tables (Frequencies, and Percentages).
- b- Statistical figures (Bar Charts and Pie figures).
- c- Statistical mean and standard deviation.
- d- One-way ANOVA.

**Results**

**Table I: Socio-Demographic Characteristics of the Study Sample:**

Demographic Data	Groups	Freq.	%
Age/years	12 - 23	43	27.4
	24 - 35	29	18.5
	36 - 47	28	17.8
	48 - 59	33	21.0
	60 - 71	16	10.2
	72+	8	5.1
Gender	Male	84	53.5
	Female	73	46.5
Residency	Urban	63	40.1
	Rural	94	59.9
Socio-economic status	Satisfied	62	39.5
	Satisfied to some extent	80	51.0
	Un satisfied	15	9.5



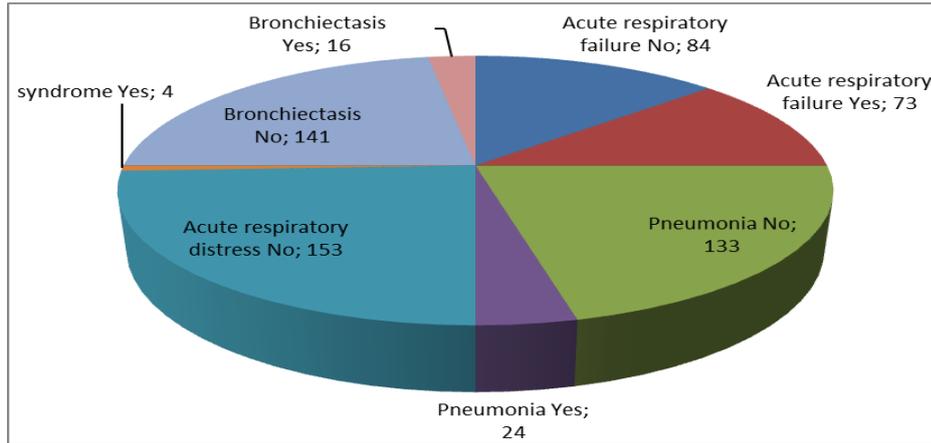


Fig-1: Complications of Respiratory System

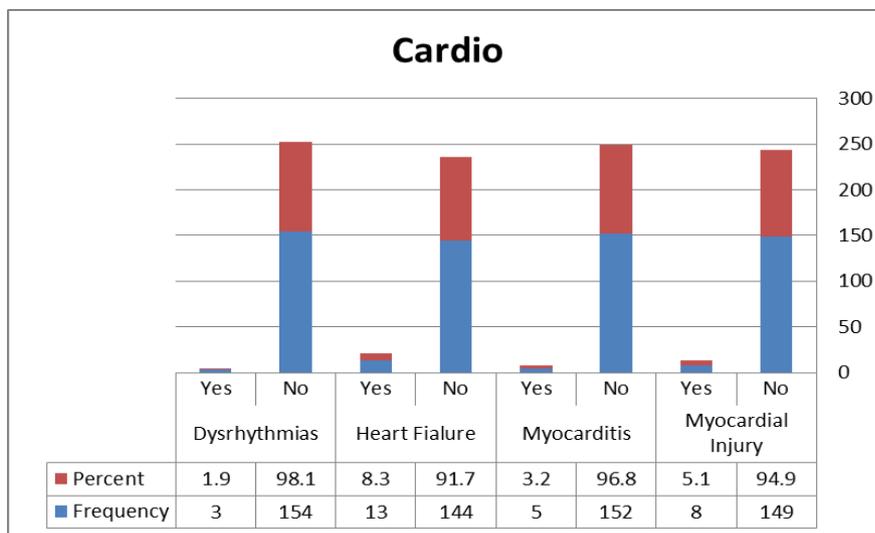


Fig-2: Complications of the Cardiovascular System

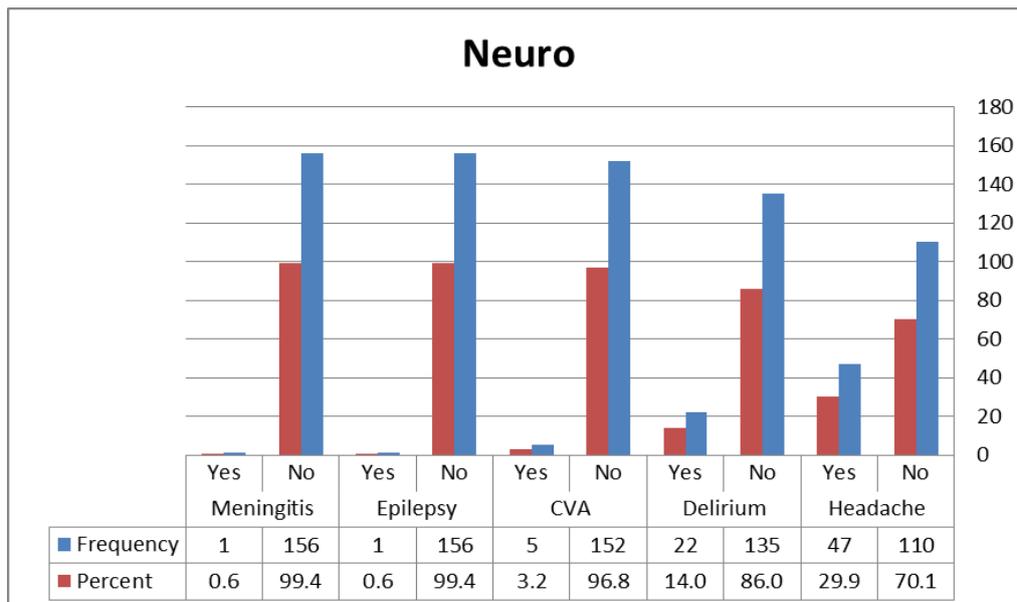
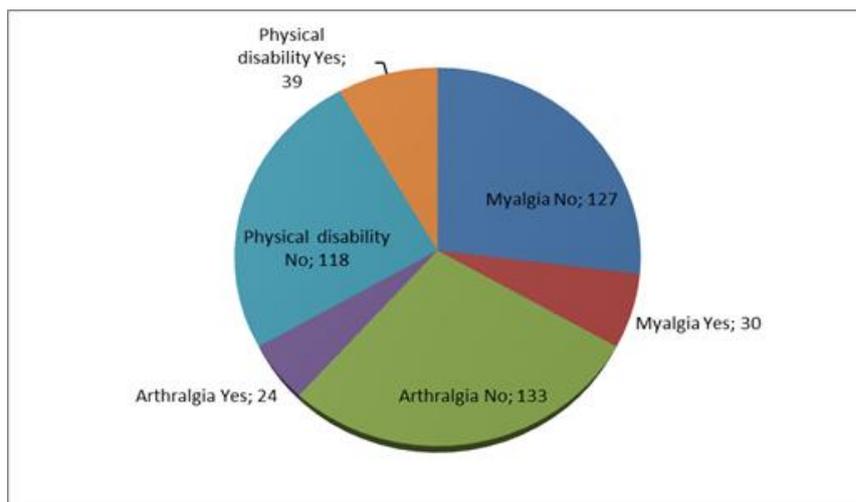
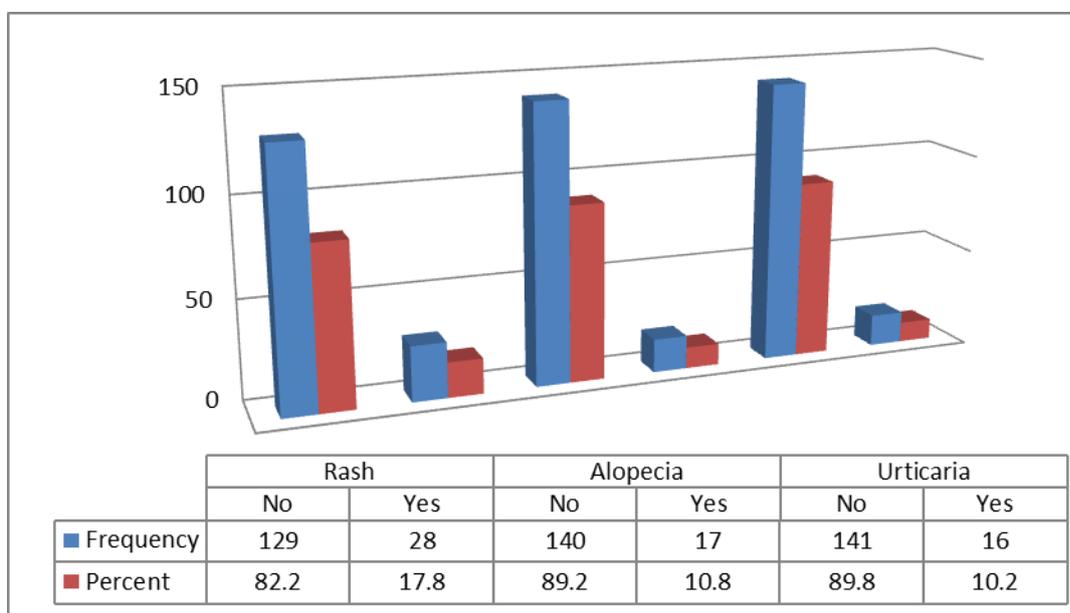


Fig-3: Complications of Neurological System



**Fig-4: Complications of the Musculoskeletal System**



**Fig-5: Complication of Integumentary System**

**Table III: Relationship between Overall Mean of COVID-19 Patient's Complication and their Demographic Data:**

Demographic Data	Df	F	P-Value	Sig.
Age	6	2.046	0.063	NS
Gender	1	0.000	0.997	NS
Residency	1	5.656	0.019	S

<b>Socio-economic status</b>	3	4.130	0.008	<b>HS</b>
<b>Level of Education</b>	5	2.041	0.076	NS
<b>Current Smoker</b>	1	7.367	0.007	<b>HS</b>

Table (3) This table demonstrates that there is a non-significant relationship between patients' COVID-19 complication and their demographical data except with residency, socio-economic status, and smoking at a P-value of more than (0.05).

**Discussion:**

Beginning in the year 2021, Corona Virus Disease 19 (COVID-19) is recognized in more than 100 nations as a catastrophic life event that has higher rates of morbidity and mortality. A million people worldwide are further impacted by COVID-19. Although many individuals have healed from COVID-19, they continue to experience a variety of physical and possibly psychological health issues. The patients' lives are in danger due to the COVID-19 recovery problems.

The goal of the current study was to ascertain the complications of COVID-19 following recovery and to ascertain how patient demographic information affected the incidence of these issues.

The findings of the study suggest that COVID-19 generates a range of problems that have an impact on every system of the body. The respiratory system is one of the systems that is impacted by COVID-19. Acute respiratory failure, pneumonia, and bronchiectasis are respiratory system-related consequences. Due to its infection patterns and effects on the environment, the coronavirus primarily affects the respiratory system. After recovering from COVID-19, many respiratory system issues can arise, according to Shari et al. in 2020 <sup>(9)</sup>. The COVID-19 virus also affects the cardiovascular system <sup>(10)</sup>. The findings of the current study indicate that patients may have heart failure, myocardial injury, increased blood coagulability, and myocarditis after recovering from COVID-19. After studying the cardiovascular side effects of COVID-19, Terpos et al. (2020) discovered that patients frequently have blood hypercoagulability <sup>(11)</sup>. According to the current study, common nervous system problems include headache, delirium, and CVA. When Mahboubi et al. (2022) examined how the Corona Virus affected the nervous system, they discovered that COVID-19 is to blame for a variety of neurological problems, including headache and stroke <sup>(12)</sup>.

Furthermore, diarrhea is one of the GIT problems that develop after COVID-19 recovery. In a study on the impact of COVID-19 on gastrointestinal functioning, Keshavarz et al. (2020) found that even after COVID-19 recovery, patients may still experience GIT issues like diarrhea, hypomotility, and ischemic GIT consequences <sup>(13)</sup>.

In terms of the musculoskeletal system's issues, it was discovered that many of the patients in this study have joint discomfort and myalgia. Hasan et al indicated that COVID-19 may increase the risk of musculoskeletal issues such as "arthralgias, myalgias, neuropathies/myopathies, and probable bone and joint injury," supports this <sup>(14)</sup>.

**Conclusions:**

The study concluded that the majority of non-smokers do not experience post-recovery issues. Conclusion: Some patients with COVID-19, especially those who were older and had hypertension, were in a severe condition when they were admitted, and they progressed quickly after recovery issues. Finally, compared to people who live in urban regions, patients in rural residential areas had a higher incidence of developing a coronavirus consequence.

**Recommendations:**

According to the study's findings, the researcher suggested the following:

After recovering from the coronavirus, the patient must continue to monitor his health by regularly seeing a qualified medical professional and following the symptoms that manifest in the body's organs to avoid numerous problems that could result in death. In addition to providing ongoing care for patients who have a coronavirus

infection, healthcare professionals should also raise public awareness of the illness and its implications. Last but not least, because it is challenging to refer patients in remote areas to hospitals or medical facilities, health centers and home care providers continuously monitor these individuals.

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**Conflict of interest:**

The authors have declared no conflicts of interest.

**Ethical Approval:**

This research was approved by the Ethical Committee at the University of Al-Ameed, Karbala, Iraq.

**Consent:**

Before the interview, all of the participants gave their written approval. Participation in the research was completely voluntary, and all information was kept secret.

**Authors contributions:**

All authors participated in the preparation of this research through the distribution of roles among them during the period of the study. Also, all authors have examined and approved the final document, and they are responsible for the manuscript's content and similarity index.

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