

ORIGINAL ARTICLE

# Study of the Severity of COVID-19 Infection in Patients with Chronic Diseases

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## Abstract

The **object** of study was conducted on 100 patients for both gender from three different geographical areas of Al-Muthanna Governorate, Samawah city, Al-Rumaitha district, and Al-Khader. The **aim** of the research was to study the association of chronic diseases with Covid-19 disease. The strongest correlation of samples infected with Covid-19 was found with the medical history of people with one or more diseases. Ages ranges were between 14 to over 60 years old. The study showed the following **results**: By age group of chronically ill patients 14-25 years old 2%, From 26-40 years 12%, 41-60 years old 18%, Over 60 years old 14%. By age group of healthy subjects 14-25 years 12%, From 26-40 years 38%, 41-60 years old 9%, Over 60 years old 2%. According to the medical history, those with one or more chronic diseases were infected with the virus 44%, Healthy people were infected with the virus 56%. According to vaccination: The rate of infection of the vaccinated is 22%, The unvaccinated infection rate is 78%. The severity of infection among the vaccinated was 16% minor injury, 6% moderate injury. The incidence of people with chronic diseases and the severity of their infection, blood pressure diseases 6% minor injury, 12% moderate injury, 3% severe injury Diabetes: 3% minor injury, 5% moderate injury, 5% severe injury. heart disease: 2% moderate injury. Asthma diseases: 2% moderate injury. Correlation rate between chronic illness and infection with the Corona virus 3% have moderate incidence of hypertension and diabetes 4% have severe high blood pressure and diabetes.

**Keywords:** COVID-19, Vaccination, Infection, Chronic disease, Medical history.

## 1 Introduction

COVID-19, a recent incident, has been quickly increasing on a worldwide scale [1]. The pandemic of Coronavirus Illness 2019 (COVID-19) has continued to spread over the world, causing massive disease loads and undermining social and economic progress [2, 3]. In the past, pandemics have disproportionately affected poorer populations, widening existing social inequalities [4, 5]. The COVID-19 has now spread

throughout the whole world, and there is growing evidence of disparities between different socioeconomic groups in mortality from COVID-19 [6]. Yet the extent of these disparities, and how they might be addressed, requires further characterisation. Chronic conditions, including chronic obstructive pulmonary disease, heart disease, diabetes and chronic kidney disease, have emerged as important risk factors for severe illness from COVID-19 infection, and there is a particular concern that socially disadvantaged popu-

lations might be affected by a confluence of epidemics from chronic diseases and COVID-19, which may exacerbate each other: a concept known as 'syndemics', defined as 'the presence of two or more disease states that adversely interact with each other [7,8].

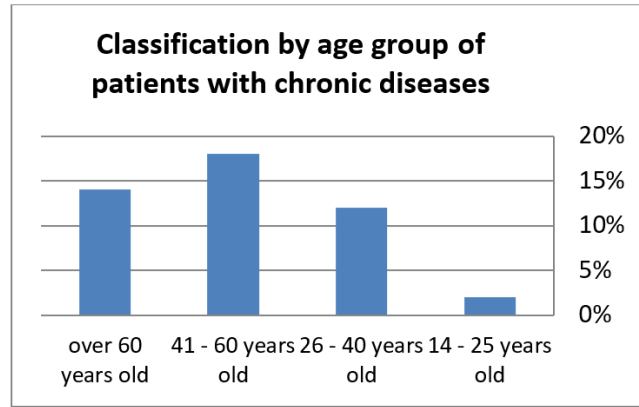
## 2 Population And Methods

A cross-sectional study field survey was conducted among for 100 patients infected by covid-19 in Iraq from three different geographical areas Samawah city, Al-Rumaitha district, and Al-Khader district from January 12, 2022, to August 23 ,2022. The process of collecting samples was based on officially registered patients, and it was confirmed that they were infected with the virus by the methods approved by diagnosing infection (PCR, Antigen-Test, X-ray, CT scan) [9]. Statistical analysis was carried out on the collected samples and they were divided according to the gender, age group, medical history and appropriate vaccination against the virus, in addition to the social status of the injured, knowing the severity of the injury and the symptoms that appeared on them.

## 3 Results

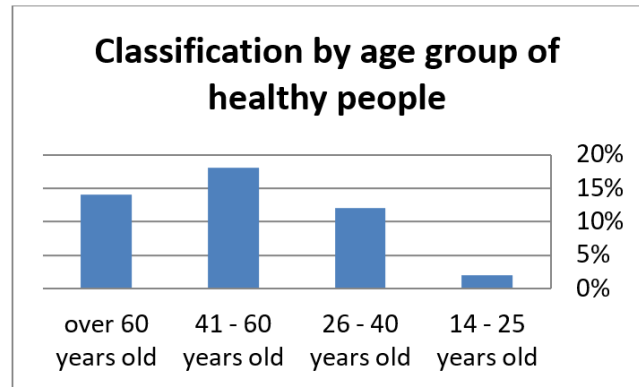
The percentages of injuries varied, according to the division listed above, with clear differences between the sexes, as well as in the age group and patient history of the people, where the severity of injury and symptoms ranged between men and women in very close proportions for both sexes, where the injury of men was estimated at 45%, while the injury of women was 55%.

We also noticed through the samples that were studied, and after performing the classification shown in the table, we found the disparity in injuries according to age groups, as they were divided from 14-25 years, 26-40 years, 41-60 years, older than 60 years, For patients with chronic diseases where the most injuries were found in the age group is from 41-60 years, As the percentage taken represents 44% of the total of samples, where this percentage was represented by people suffering from one or more chronic diseases and according to the patients' medical history, Figure 1.



**Figure 1:** Classification by age group of patients with chronic diseases.

The results also showed that the largest percentage of the infected people did not have a history of disease with chronic diseases, where their percentage was 56%, but with regard to the age group, there is a solid correlation in the same category for the injured for people who have a history of chronic diseases compared to the people without chronic diseases, where the largest percentage of those infected was between 41-60 years, where their percentage was estimated at 38% and also compared to the rest of the ages and their percentages, Figure 2.



**Figure 2:** Classification by age group of healthy people.

Where their percentages were as mentioned previously in the chart, and thus the total percentage of people with chronic diseases (medical history) is one or more, and among healthy people in general, 44% of people with chronic disease, 55% of healthy people for 100 samples taken for people infected with Covid-19 virus.

After studying the samples taken and knowing the vaccinators of different ages after being infected, whether the infection was between the two doses or after the first dose, where the percentage of those vaccinated with the vaccine designated for the virus

was 22% of all injuries ranged from simple to moderate, where the percentage of simple infection was 16% and medium was 6%, and there was no serious infection in all vaccinated, and the symptoms that appeared on all vaccinated people were 16% (heat, headache, dry cough) And 6% (fever, headache, dry cough, chest pain).

After we showed the severity of infection and the accompanying symptoms, the percentage of infected people after vaccination and those who were not vaccinated as well, and the percentage of people with chronic diseases from healthy people, after the study that was conducted on the samples, it was noted that there is a strong correlation between infection with the virus and the disease history of people, as it was found that people with chronic diseases, especially infected Diabetes and blood pressure are more susceptible to infection with the virus, and the severity of their infection ranges between moderate and severe compared to other chronic diseases, Figure 3.

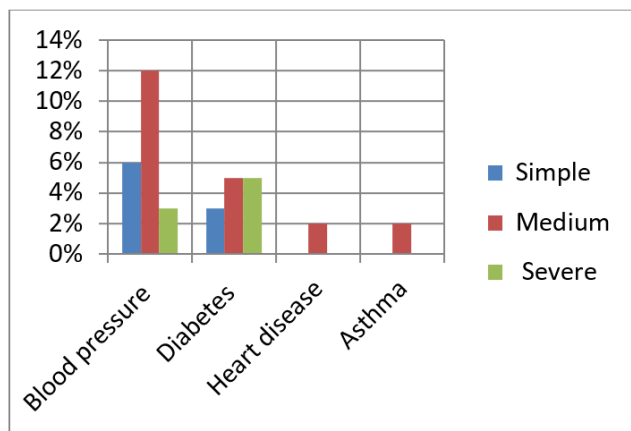


Figure 3: Classification by age group of healthy people.

As we showed in the chart the percentage of carriers of chronic diseases who were infected with the virus with the severity and percentage of infection, there is also a correlation with some chronic diseases and the severity of infection, as it was found that people with diabetes with high blood pressure become severely infected with the virus and at a high rate among people, and there are few cases that were severely infected medium.

The above chart shows the degree to which the chronic disease is related to the severity of infection. Also, if a person has more than one chronic disease that leads to severe infection with the Corona virus, as the relationship is direct between the chronic disease and the severity of the infection.

## 4 Discussion

The results that were taken from 100 different samples show that the severity of the disease is arranged according to the age group, vaccination and patient history, as well as the greater the number of chronic diseases. The limitations of the study include the use of a single health system and the reliance on diagnostic codes in hospitals by medical staff, however, we used a standard approach to classify diagnoses [10]. The more severe the infection. It was observed that the infection was mostly severe in patients with diabetes and blood pressure of the same sample [11]. While noting some bad habits in people, such as smoking, a noticeable difference was observed between the symptoms that smokers suffer from compared to healthy people, or even the severity of the infection. Smokers have more severe symptoms [12]. Where the strongest correlation of samples infected with Covid-19 was found with the medical history of people with one or more diseases. By gender 55% for women, 45% for men. By age group of chronically ill patients 14-25 years old 2%, From 26-40 years 12%, 41-60 years old 18%, Over 60 years old 14%. By age group of healthy subjects 14-25 years 12%, From 26-40 years 38%, 41-60 years old 9%, Over 60 years old 2%. According to the medical history, those with one or more chronic diseases were infected with the virus 44%, Healthy people were infected with the virus 56%. According to vaccination: The rate of infection of the vaccinated is 22%, The unvaccinated infection rate is 78%. The severity of infection among the vaccinated was 16% minor injury, 6% moderate injury. The incidence of people with chronic diseases and the severity of their infection, blood pressure diseases 6% minor injury, 12% moderate injury, 3% severe injury Diabetes: 3% minor injury, 5% moderate injury, 5% severe injury. heart disease: 2% moderate injury. Asthma diseases: 2% moderate injury. Correlation rate between chronic illness and infection with the Corona virus 3% have moderate incidence of hypertension and diabetes 4% have severe high blood pressure and diabetes

## 5 Conclusion

It was noted that there is a strong correlation between infection with the virus and the disease history of people, as it was found that people with chronic diseases, especially patients over 60 years old infected with diabetes and blood pressure are more susceptible to infection with the virus, and the severity of their infection ranges between moderate and severe compared to other chronic disease. Obtaining a detailed and accurate medical history from COVID-19

patients and analyzing their data may allow the identification of the most high-risk areas so that effective medical care can be provided and the chronic diseases most closely related to patient severity and thus may lead to the development of point-of-care tools to assist clinicians in stratifying patients based on potential requirements in the standard of care, to increase the odds of surviving Covid-19 disease.

## Recommendations

People with a chronic disease, in general, must take the preventive measures established by the approved health authorities for sterilization and personal protection, while maintaining social distance between people. Unvaccinated people should also take the initiative to vaccinate to ensure that the severity of their infection does not increase. Also, the elderly must take preventive measures and initiate vaccination.

**Conflict of Interest:** The authors declare no conflict of interest.

**Financing:** The study was performed without external funding.

**Ethical consideration:** The study was approved by AL-Furat AL-Awsat Technical University, Samawah Technical Institute, Samawah, Iraq.

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