



Original Article

# Study of Effects and Complications for People Infected with COVID-19

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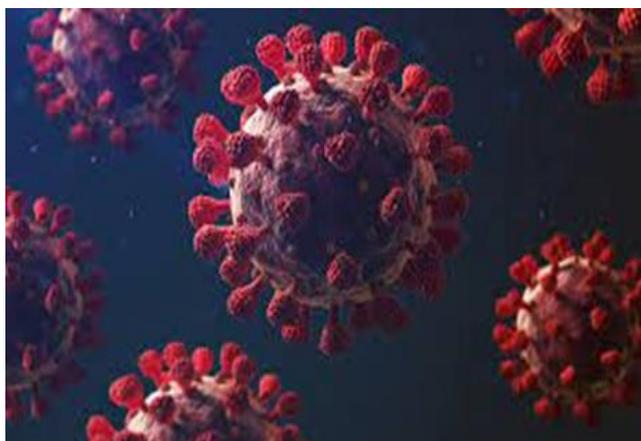
Age

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## ABSTRACT

In December 2019, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was identified in Wuhan, China from a cluster of severe pneumonia cases. The virus and the disease it causes (COVID-19) have now spread globally and are responsible for an ongoing pandemic that has claimed hundreds of thousands of lives. Participants in the study might be either sexed and could be of any ages. A Google form-created electronic questionnaire was used to collect the data. The participants in the research should have COVID-19 virus infection. To determine the severity and duration of infection, the fear state of the affected people, and knowledge of health issues caused by this virus, a study was conducted on people who had contracted COVID-19. This study included the healthy people and those who suffered from chronic diseases (diabetes type 1, diabetes type 2, blood pressure, respiratory diseases, and heart diseases). There is a correlation between age and infected Covid-19. Our results suggest that more attention is needed to be paid to the elderly patients with a chronic disease.

## GRAPHICAL ABSTRACT



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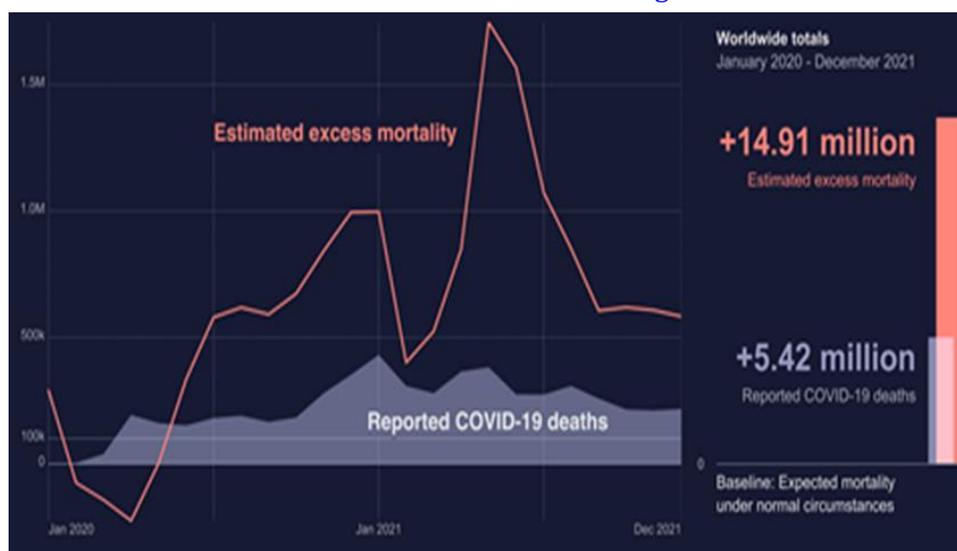
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## Introduction

SARS-CoV-2 is known the coronavirus. The family coronaviridae includes a vast number of viruses known as coronaviruses (CoVs). The four genera of CoVs are alpha, beta, gamma and delta-CoV. All CoVs that are now recognized as being able to harm humans are either alpha- or beta-CoVs. Many of these CoVs can also infect different animal species. A zoonotic virus is one that frequently spreads from an animal to the human. A spillover event occurs when a virus spreads

from animals to humans for the first time [1]. The encapsulated virions (viral particles) of coronaviruses are about 120 nm in diameter. Beyond the number of COVID-19 deaths reported by countries, the monitoring of excess mortality gives us a more thorough knowledge of the impact of COVID-19. To understand the full impact and burden of the pandemic on nations, health systems, and people, the World Health Organization (WHO) is keeping the track of global excess mortality as it changes over time, as shown in Figure 1.



**Figure 1:** Global excess deaths associated with COVID-19, January 2020-December 2021

People with COVID-19 have reported experiencing a wide range of symptoms, from minor discomfort to serious sickness. About two to fourteen days after virus contact, symptoms such as fever or chills, coughing, shortness of breath or difficulty breathing, fatigue, muscle or body aches, headache, and a new loss of taste or smell may start to show develop that a person may have COVID-19. Other symptoms reportedly associated with CoVs patients include sore throat, runny or congested nose, nausea, vomiting, and diarrhea There are other possible symptoms associated with CoVs patients that has not been mentioned in the list of possible symptoms as CDC are committed to keep updating the list following the new discoveries on COVID-19 becomes available. The report shows that elder people and those with an underlined medical abnormality such as cardiovascular and respiratory disorders within the age of 70 and

above tend to suffer severe CoVs complications [2].

In December 2019, the acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was identified in Wuhan, China from a cluster of severe pneumonia cases. The virus and the disease it causes (COVID-19) have now spread globally and are responsible for an ongoing pandemic that has claimed hundreds of thousands of lives [3].

Briefly speaking, CoVs is contributed as an international tragedy and has affected the socio-economic aspects of the international body.

Iraq's first case was reported on February 24, 2020 [4]. However, not all people are equally affected by the virus; people with diabetes or cardiovascular disease had a 2, 5-3, and 9 times higher odds of being infected [5], though not everyone is equally affected by it. Infection typically has worse outcomes and a higher

mortality rate in the elderly patients and those with comorbid conditions like hypertension, cardiovascular disease, chronic respiratory disease, chronic kidney disease, and diabetes [6]. Various reports indicate that chronic patients have delayed seeking medical attention [7] some of which were concerned about contracting the coronavirus [8]. Patients have also fewer options for care and support in their local communities.

This raises the major concerns about the indirect health impact of COVID-19, particularly for chronic diseases accelerated the development and increased complications as a result of delayed and limited access to the secondary treatment and a disruption in the primary care level follow-up [9].

Interstitial pneumonia and respiratory distress syndrome brought on by a coronavirus can result in multiple organ failure [10]. The virus may have an impact on a number of bodily functions and organs, including the heart (damage to the heart muscle and heart failure), lungs (damage to lung tissue and the restrictive lung failure), brain and nervous system (insomnia and effects of thrombo-embolic events, such as stroke and cognitive impairment), mental health (anxiety, depression, and sleep disturbance), musculoskeletal issues, and fatigue [11]. Even after they have recovered, patients may still have hypoxia, breathlessness, and diminished productivity [12, 13]. According to the recent research, certain patients may encounter medical issues, and 11%–24% of COVID-19 patients may continue to endure the long-term symptoms even three months after the sickness started [14, 15]. Because of the aforementioned factors, COVID-19 may both temporarily and permanently worsen the health-related quality of life (HRQoL) of the patients.

## Materials and Methods

This was a cross sectional study performed in Iraq since the 15 March to 28 May 2021. Data were collected by using an electronic questionnaire prepared on google form. The participant in the study should be infected with the COVID-19 virus. A total of 250 forms were

gathered; however, some of them were excluded because they were invalid, and the final number that was accepted was (223). Participants in the study might be either sexed and could be of any ages.

To determine the severity and duration of infection, the degree of fear for the affected people, and knowledge of health issues caused by this virus, a study for people with COVID-19 infection was conducted including both those with and without chronic diseases (diabetes type 1, diabetes type 2, blood pressure, respiratory diseases, and heart diseases).

### *Ethical approval*

The Scientific Committee of the College of Pharmacy at the University of Alkafeel gave its approval to this study, and a group of participants gathered the survey.

### *Statistics and Analysis*

The data were collected and organized by Microsoft Excel 2016. The descriptive statistic was made in term of number of samples, frequency, and percentage.

## Results and Discussion

### *The basic characteristics of study sample*

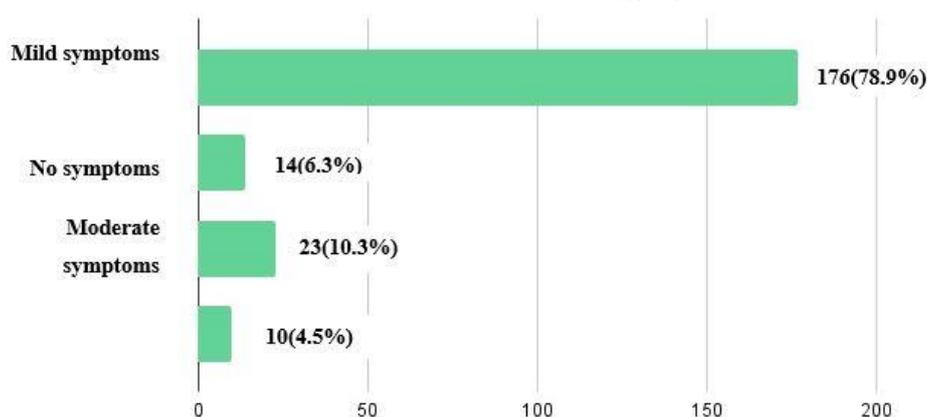
Table 1 contained the demographic data on the participants by gender, marital status, and age groups, and revealed that women (66.4%) and adults in their 30s (80.3%) made up the majority of the study's sample. In addition, more people (69.5%) were single rather than the married participants (30.5%). The infected individuals were more likely to have chronic disease (34.9%) than without them (65.1%).

### *Severity of infection*

As indicated in Figure 2, a high percentage (78.9%) of people whose symptoms were mild, although some of them suffered from the chronic diseases. As for those whose symptoms were severe and needed to be quarantined in the hospital, there was a small percentage (4.5%).

**Table 1:** The basic characteristics of study sample

Characteristics	Frequency (%)
Total number	223 (100%)
Age	
20-30	179 (80.3%)
30-40	6 (2.7%)
40-50	17 (7.6%)
>50	21 (9.4%)
Gender	
Male	75 (33.6%)
Female	148 (66.4%)
Marital status	
Married	68 (30.5%)
Single	155 (69.5%)
Chronic diseases	78 (34.9%)
No chronic diseases	145 (65.1%)

**Figure 2:** Severity of infection

#### *Duration of infection*

Concerning the duration of infection in this study, the results showed the high rates (56%) for ten days or less, while more than ten days was (43.8%) (Figure 3).

#### *Symptoms of infection*

The answers to the questionnaire showed that the most frequent symptoms when infected with the virus were high body temperature and headache, while the least were vomiting and other symptoms (Figure 4).

#### *Treatment ratings during infection*

The treatments used during the infection were a dietary supplement (82.6%), antibiotics (62.1%), and analgesics (54%) (Figure 5).

#### *Fear rating during infection*

In Figure 6, the results showed that (74.1%) from sample study was afraid and (25.9%) was non-afraid.

#### *Complications of infection*

The results showed that most of the infected people had health problems after recovery, the most important of which were bronchial sensitivity (25.4%), lung problems (7.6%), kidney problems (6.7%), blood clotting (6.3%), and others (62.9%) included hair loss, pain in the bones and joints, loss of balance, skin problems and poor memory (Figure 7).

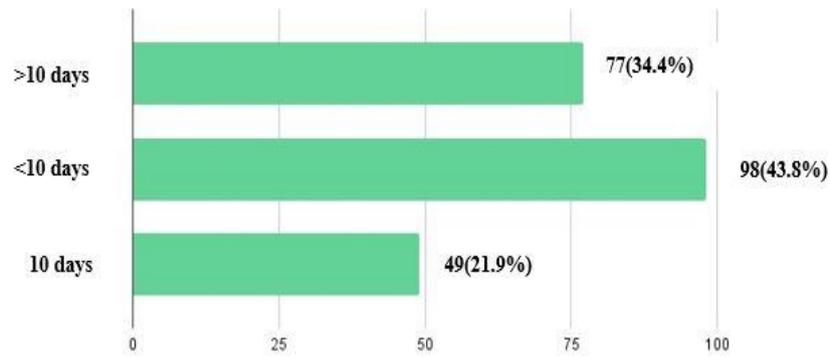


Figure 3: Duration of infection

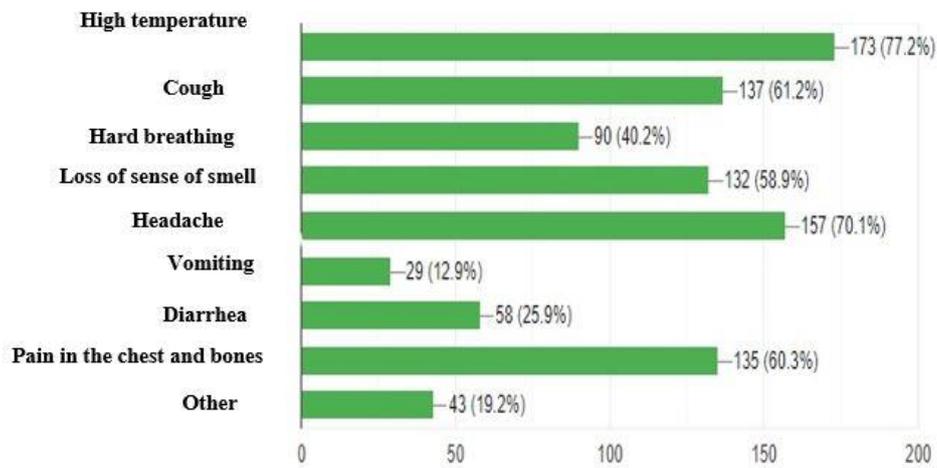


Figure 4: Symptoms of infection

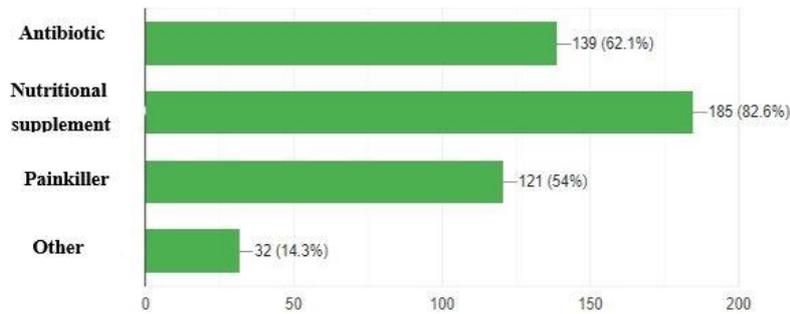


Figure 5: Treatment ratings during infection

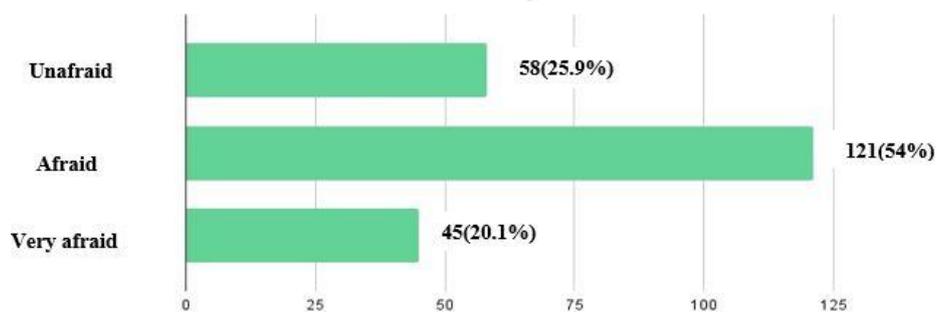
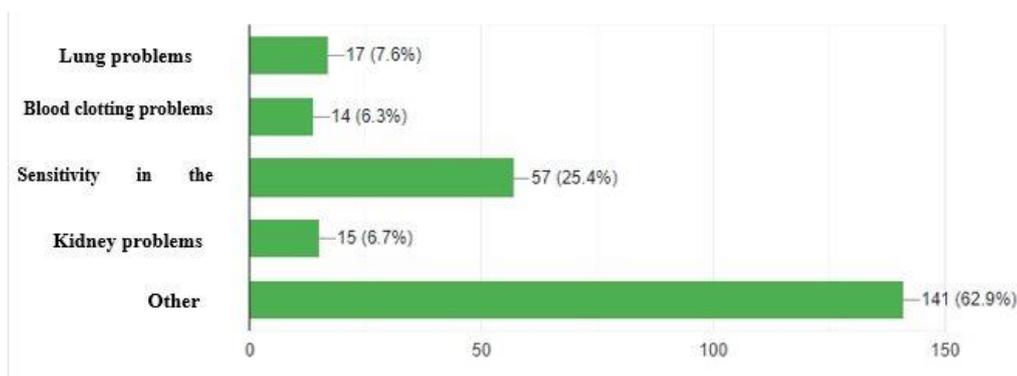


Figure 6: Fear rating during infection



**Figure 7:** Complications of infection

The specific information relating to the 2019 (COVID-19) coronavirus disease pandemic is currently developing. According to the recent research, COVID-19 hospitalization increases the risk of severe illness and death in older individuals and those with underlying comorbidities. Understanding the age-adjusted link between comorbidity and COVID-19 results is important because comorbidity rises with the age [16]. Since the SARS-CoV-2 outbreak began, it has become obvious that the population structure has a significant impact on the infection incidence and fatality rate.

With the exception of the oldest women (over 90), men generally exhibit the higher infection rates in the geriatric class (over 50). A fascinating exception to this rule is the age group of 20 to 29, when the ratio was lopsided in favor of men. In the age range of 50, OR was about 1.0. This investigation confirms that the biological sex and age-related environmental factors have a significant impact on COVID-19 infection by SARS-Cov-2 [17].

In addition, the majority of people under 25 are students who are compelled to complete their coursework online from home, but people over 25 had lower compliance rates with the community seclusion and isolation rules imposed by the regional health officials. As a result, the incidence rate of COVID-19 increases with the proportion of adults over 25. Since people who disregard the quarantine regulations run the risk of being exposed to a setting with an elevation possibility of infection [18].

There are a number of plausible biological theories for why the elder people are more

susceptible to COVID-19 and why, regardless of the total infection level, they die at considerably greater rates. The first reason is that aging immune systems may make the elderly people more susceptible to contracting the illness when exposed to the virus. Since COVID-19 is a novel virus that has never been encountered, having more immune cells ready to fight is vital because immune senescence grows noticeably with aging [19].

Compared with other COVID-19 patients who are healthy, those with chronic illnesses are more likely to experience severe COVID-19 consequences and to succumb to the illness. This is due to the fact that with any disease, those who have a chronic illness or whose immune systems are compromised are more likely to contract it since the disease has more time to cause the harmful effects on their bodies before their immune systems kicks in. These people frequently experience the additional problems that may or may not be present in other patients with the same illness. Patients with chronic lung disorders, severe asthma, serious cardiac issues, severe obesity, diabetes mellitus, chronic renal diseases, and liver diseases, among others, are at risk for developing severe COVID-19 consequences [20].

## Conclusion

People with chronic illnesses should be informed about their easy disposition to contracting the virus. This would encourage them to take the highly drastic measures in protecting themselves and also foster their efforts positively towards managing whatsoever chronic ailment that they

are suffering from. Our findings also point to the need for greater clinical management of patients, particularly those over 65 and for increased financial support to modernize the healthcare infrastructure in low-income nations to promote the population health. The SARS-CoV-2 epidemic highlighted a huge difference in age and gender virus impact both in incidence of cases and in fatality rate. The severe effects of this epidemic underline the need to understand the different reaction to the viral agent causing the disease. Our results suggest the complex modulations of the response to infection, specific for the age and gender groups and indicate new perspectives in future research to understand the disease mechanisms and develop the suitable therapies.

### Recommendations

Prevention of this virus to reduce the chances of infection or the number of viruses entered the body when infected.

Medical follow-up after infection, especially for people who suffer from chronic diseases, as this virus may cause many problems in the body.

Follow-up the doctor's instructions in the treatment of corona virus, as some medicines may affect the immune system.

Be sure to take vaccinations to protect the society from this epidemic.

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### Authors' contributions

All authors contributed to data analysis, drafting, and revising of the paper and agreed to be responsible for all the aspects of this work.

### Conflict of Interest

The author declared that they have no conflict of interest.

### References

[1]. Sohrabi C., Alsafi Z., O'Neill N., Khan M., Ahmed Kerwan., Al-Jabir A., Iosifidis C., Agha R.,

World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19)., *International Journal of Surgery*, 2020, **76**:71 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]

[2]. World Health Organization (Who) [[Publisher](#)]

[3]. Bradley B.T., Maioli H., Johnston R., Chaudhry I., Fink S.L., Xu H., Najafian B., Deutsch G., Lacy J.M., Williams T., Yarid N., Histopathology and ultrastructural findings of fatal COVID19 infections in Washington State: a case series, *The Lancet*, 2020, **396**:320 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]

[4]. Carsana L., Sonzogni A., Nasr A., Rossi R.S., Pellegrinelli A., Zerbi P., Rech R., Colombo R., Antinori S., Corbellino M., Galli M., Pulmonary post-mortem findings in a series of COVID-19 cases from northern Italy: a two-centre descriptive study, *The Lancet infectious diseases*, 2020, **20**:1135 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]

[5]. Wang B., Li R., Lu Z., Huang Y., Does comorbidity increase the risk of patients with COVID-19: evidence from meta-analysis, *Aging*, 2020, **12**:6049 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]

[6]. Shahid Z., Kalayanamitra R., McClafferty B., Kepko D., Ramgobin D., Patel R., ... & Jain R., COVID-19 and older adults: what we know, *Journal of the American Geriatrics Society*, 2020, **68**:926 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]

[7]. Verhoeven V., Tsakitzidis G., Philips H., Van Royen P., Impact of the COVID-19 pandemic on the core functions of primary care: will the cure be worse than the disease? A qualitative interview study in Flemish GPs, *BMJ Open*, 2020, **10**:e039674 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]

[8]. Schouten J.A.M., De hulpvraag. In: Anamnese en advies. Bohn Stafleu van Loghum, Houten. 2004, 93 [[Crossref](#)], [[Publisher](#)]

[9]. Danhieux K, Buffel V., Pairon A., Benkheil A., Remmen R., Wouters E., Olmen J.V. The impact of COVID-19 on chronic care according to providers: a qualitative study among primary care practices in Belgium, *BMC Family Practice*, 2020, **21**:255

- [Crossref], [Google Scholar], [Publisher]
- [10]. Zhou F., Yu T., Du R., Fan G., Liu Y., Liu Z., Xiang J., Wang Y., Song B., Gu X., Guan L., Wei Y., Li H., Wu X., Xu J., Tu S., Zhang Y., Chen H., Cao B., Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study, *The Lancet*, 2020, **395**:1054 [Crossref], [Google Scholar], [Publisher]
- [11]. Poudel A.N., Zhu S., Cooper N., Roderick P., Alwan N., Tarrant C., Yao G.L., Impact of Covid-19 on health-related quality of life of patients: A structured review, *PLoS One*, 2021, **16**:e0259164 [Crossref], [Google Scholar], [Publisher]
- [12]. Bryson W.J., Long-term health-related quality of life concerns related to the COVID-19 pandemic: a call to action, *Quality of Life Research*, 2021, **30**:643 [Crossref], [Google Scholar], [Publisher]
- [13]. Santus P., Tursi F., Croce G., Di Simone C., Frassanito F., Gaboardi P., Airoidi A., Pecis M., Negretto G., Radovanovic D., Changes in quality of life and dyspnoea after hospitalization in COVID-19 patients discharged at home, *Multidisciplinary Respiratory Medicine*, 2020, **15**:713 [Crossref], [Google Scholar], [Publisher]
- [14]. Ding H., Yin S., Cheng Y., Cai Y., Huang W., Deng W., Neurologic manifestations of nonhospitalized patients with COVID-19 in Wuhan, China, *MedComm*, 2020, **1**:235 [Crossref], [Google Scholar], [Publisher]
- [15]. Cirulli E.T., Barrett K.M.S., Riffle S., Bolze A., Neveux I., Dabe S., Grzymiski J.J., Lu J.T., Washington N.L., Long-term COVID-19 symptoms in a large unselected population, *medrxiv*, 2020 [Crossref], [Google Scholar], [Publisher]
- [16]. Mason K.E., McHale P., Pennington A., Maudsley G., Day J., Barr B., Age-adjusted associations between comorbidity and outcomes of COVID-19: a review of the evidence, *medRxiv*, 2020 [Crossref], [Google Scholar], [Publisher]
- [17]. Arisi I., MANTUANO E., Age and gender distribution of COVID-19 infected cases in Italian population, *Research Square*, 2020 [Crossref], [Google Scholar], [Publisher]
- [18]. Hu D., Lou X., Meng N., Li Z., Teng Y., Zou Y., Wang F., Influence of age and gender on the epidemic of COVID-19, *Wiener Klinische Wochenschrift*, 2021, **133**:321 [Crossref], [Google Scholar], [Publisher]
- [19]. Crimmins E.M., Age-Related Vulnerability to Coronavirus Disease 2019 (COVID-19): Biological, Contextual, and Policy-Related Factors, *Public Policy & Aging Report, National Library of Medicine*, 2020, **30**:142 [Crossref], [Google Scholar], [Publisher]
- [20]. Verhoeven V., Tsakitzidis G., Philips H., Van Royen P., Impact of the COVID-19 pandemic on the core functions of primary care: will the cure be worse than the disease? A qualitative interview study in FlemishGPs. *BMJ Open*, 2020, **10**:e039674 [Crossref], [Google Scholar], [Publisher]

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