

REVIEW ARTICLE

CAUSES OF DEATH IN COVID-19 REVIEW ARTICLE

ABSTRACT

BACKGROUND: More than two million people have died worldwide as a result of the new corona strain virus SARS-CoV-2 and the associated COVID-19 syndrome. Older patients with a pre-existing health problem are more likely to die from their illness. We found that septic shock and multiple failure were the most common causes of death, mainly due to inflammation of the lungs, although there was no definitive study on the causes of death and the role of pre-existing conditions. In a few cases, respiratory failure caused by excessive alveolar injury was the cause of immediate death. In most cases, comorbidities such as asthma, heart disease, and obesity were present.

CONCLUSION: Our findings indicate that COVID-19 was actually related to death in the majority of decedents, rather than being a direct product of pre-existing health conditions and comorbidities. As a result, we concluded that COVID-19 killed the vast majority of patients, with pre-existing health issues playing only a minor role in the death mechanism.

KEYWORD: COVID-19, SARS-CoV-2, Infection, Respiratory Failure and Pulmonary Infection

INTRODUCTION

COVID-19 is caused by a corona 2 virus that causes severe respiratory disease (SARS-CoV-2). In December 2019, the epidemic struck its base in Wuhan, China.¹ Keeping track of emerging health patterns can be intimidating at any time of the year. However, the unpredictable presence of corona virus infection 2019 (COVID-19) has made clarification impossible this year. After the daily COVID-19-related deaths last spring, mortality rates began to plummet, giving hope that the worst was yet to come.² However, after many deaths in the summer, prices have risen sharply. This fall, one million new cases of acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections, which had risen earlier each year, began to occur weekly; as of December 13, the total number of infections in the United States had exceeded 16 million. In addition, an

increase in co-morbidities, such as hypertension, diabetes, coronary heart disease, and chronic obstructive pulmonary disease, will increase the risk of these complications.³

Any SARS-CoV-2 infection is a symptom, but most cause respiratory and flu-like symptoms such as fever, chills, cough, and sore throat.^{4,5}

An autopsy is ~~a golden way~~ essential to determine medical disorders and causes of death. COVID-19 has caused damage to many organs, according to several sources. However, other studies have found that pulmonary thromboembolism can be dangerous in a few cases.⁶

Autopsy procedure: In 26 patients with COVID-19, external examinations, full autopsy, and tissue sampling were performed using a standard procedure, which included opening all light structures and flashlights of all body parts. In all bodies, safety procedures such as FFP2-goggles, protective jackets, and cut-off gloves have been used, according to new guidelines for successful autopsies in suspected COVID-19 cases. Samples representing the body tissues of both organs were prepared in 4% buffered formalin, dehydrated, paraffin embedded, and separated by a magnitude of 4 m for histopathology. Hematoxylin and eosin (HE), periodic acid Schiff's reaction (PAS), Van Gieson's stretchable color, Prussian blue, and Congo red were used to contaminate paraffin components. Both of these slides were easily analyzed by microscopies, at least by two pathologists.^{7,8}

Reasons of Death And Co Morbidity

With the increasing rate of Covid-19 mortality rates worldwide, the exact details predicting these deaths remain scarce. According to one study, dead patients were reported to have lower lymphocyte counts or high protein-C levels or D-dimer levels, as evidenced by laboratory results. But this is not enough to know the real course of physical death. There are many reasons for the cause of Covid-19 patient deaths. Some of them die before they even get to the hospital, as the disease has had a profound effect on their bodies for a long time, making it difficult for them to ~~recover early~~ survive before accessing health facilities. While in some of them, the patient may be able to access the hospital but not all will be admitted to the intensive care unit (ICU).⁹ This happens when patients' chances of survival are very low. They can be supported by non-inhalation and possibly vasopressin, but in the event of further deterioration in health, mechanical respiration will not be considered and death will occur due to hypoxemia. Another factor could be that, although the patient arrives at the hospital on time, the lack of medical equipment such as respirators, beds, inadequate oxygen supply, lack of other medical services or highly efficient doctors, may be the cause of death. The risk of death from Covid-19 depends largely on age and previous health conditions. Aging, chronic diseases such as heart disease,

Formatted: Superscript

Formatted: Superscript

asthma, high blood pressure, diabetes, lung disease, cancer can lead to serious and fatal consequences. Patients admitted to the ICU for these types of flu treatments and tests obtained from SARS-Cov-2 have serious health problems that often lead to their deaths. In these cases, the actual contribution to the virus is very low. At the same time, there are patients in the ICU who suffer from severe trauma, terminal organ failure-, brain injury, metastatic cancer, which is eventually diagnosed during hospitalization and death. In these cases, it is difficult to predict whether a viral infection or the underlying condition of the patient is the cause of death.¹⁰

To date, many researchers have conducted several studies to determine the exact causes of Covid-19 mortality. The meta-analysis on Covid-19 comorbidities included 1786 patients, 1044 were male and 742 were female, aged 41 years. The most common comorbidities found in patients are hypertension (15.8%), cardiovascular and cerebrovascular disease (11.7%), diabetes (9.4%), *** and hepatitis B infection (1.5%), injury (-1.5%), respiratory diseases (1.4%), kidney conditions (0.8%), and immunodeficiency (0.8%). ~~(0.1 percent)~~. In a study in Wuhan, China, 41 Covid-19 patients were hospitalized, 100% had pneumonia, 29% had severe respiratory disease (ARDS), 15% had severe heart damage, and 12% second infection. Cardiovascular and pulmonary comorbidities like pulmonary thromboembolism, brachial cortex, ventricular heart failure, pulmonary edema, pulmonary hypertension, pre-exist emphysema, atherosclerosis, artery disease, artery hypertension, ischemic heart disease was common in patients killed by Covid-19. Among older patients myocardial injury and myocarditis have become the most common causes of death.¹¹

Chronic neurological diseases (CND) such as cerebrovascular disease, psychiatric disorders, neuromuscular and spinal disorders, movement disorders, central nervous system tissue, multiple sclerosis, neurolupus, and malfunction syndrome are identified. Severe Kidney Injury is a major problem for Covid-19 (AKI) patients. Kidney damage (acute tubular necrosis) with septic shock, mild inflammation, increased blood pressure, and direct kidney infection may be some of the symptoms associated with Covid-19 that are believed to lead to AKI. Patients suffering from AKI are at greater risk of developing Chronic Kidney Failure (CDK). Digestive problems such as intestinal infections and chronic liver failure can also be identified.¹²⁻¹⁶

CONCLUSION:

With this review it can be concluded that the underlying conditions of patients play a major role, as well as the infection of the SARS-CoV-2 virus, in a person's death.

Our data show that in most cases with COVID-19 serious and lethal, patients had died of the disease, although there were many health conditions available. These findings also support the view that patients killed by COVID-19 appear to have lost a lifetime, beyond their age, as reported by others. In addition, our study emphasizes the importance of autopsy in clinics to better understand new viral infections.

REFERENCES

1. Rakesh Kumar Jha, Pradip Jain, Ranjit S. Ambad, Nandkishor. The Origin, Transmission and Mortality of Corona Virus. JCR. 2020; 7(10): 93-96. doi:10.31838/jcr.07.10.23.
2. Trends in number of COVID-19 cases and deaths in the US reported to CDC, by state/territory. Centers for Disease Control and Prevention. Published December 14, 2020. Accessed December 14, 2020.
3. Buran, T., Sanem Gökçe Merve Kılınc, & Elmas Kasap. (2020). Prevalence of Extraintestinal Manifestations of Ulcerative Colitis Patients in Turkey: Community-Based Monocentric Observational Study. *Clinical Medicine and Medical Research*, 1(2), 39-46. <https://doi.org/10.52845/CMMR/2020v1i2a8>
4. Zheng, Z.; Peng, F.; Xu, B.; Zhao, J.; Liu, H.; Peng, J.; Li, Q.; Jiang, C.; Zhou, Y.; Liu, S.; et al. Risk factors of critical & mortal COVID-19 cases: A systematic literature review and meta-analysis. *J. Infect.* 2020, 81, e16–e25.
5. Palmieri, L.; Vanacore, N.; Donfrancesco, C.; Lo Noce, C.; Canevelli, M.; Punzo, O.; Raparelli, V.; Pezzotti, P.; Riccardo, F.; Bella, A.; et al. Clinical characteristics of hospitalized individuals dying with COVID-19 by age group in Italy. *J. Gerontol. A Biol. Sci. Med. Sci.* 2020, 75, 1796–1800
6. Control, E. C. f. D. P. a. COVID-19 situation update for the EU/EEA and the UK, as of 13 June 2020.
7. Daniel, V. ., & Daniel, K. (2020). Diabetic neuropathy: new perspectives on early diagnosis and treatments. *Journal of Current Diabetes Reports*, 1(1), 12–14. <https://doi.org/10.52845/JCDR/2020v1i1a3>
8. Wu Z, McGoogan JM Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention. *JAMA.* 2020 Apr 7; 323(13):1239-1242.
9. Wichmann D Autopsy Findings and Venous Thromboembolism in Patients With COVID-19. *Ann Intern Med.* 2020 Dec 15; 173(12):1030.

10. Prevention CfDca. Collection and Submission of Postmortem Specimens from Deceased Persons with Known or Suspected COVID-19 - Interim Guidance. <https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-postmortem-specimens.html>. Accessed 15.06.2020.
11. Daniel, V., & Daniel, K. (2020). Perception of Nurses' Work in Psychiatric Clinic. *Clinical Medicine Insights*, 1(1), 27-33. <https://doi.org/10.52845/CMI/2020v1i1a5>
12. Osibogun A, Balogun M, Abayomi A, et al. Outcomes of COVID-19 patients with comorbidities in southwest Nigeria. *PLoS One*. 2021;16(3):e0248281. Published 2021 Mar 15. doi:10.1371/journal.pone.0248281
13. Cho SI, Yoon S, Lee HJ. Impact of comorbidity burden on mortality in patients with COVID-19 using the Korean health insurance database. *Sci Rep*. 2021;11(1):6375. Published 2021 Mar 18. doi:10.1038/s41598-021-85813-2
14. Daniel, V., & Daniel, K. (2020). Exercises training program: It's Effect on Muscle strength and Activity of daily living among elderly people. *Nursing and Midwifery*, 1(01), 19-23. <https://doi.org/10.52845/NM/2020v1i1a5>
15. Ortiz-Prado E, Simbaña-Rivera K, Gómez-Barreno L, et al. Clinical, molecular, and epidemiological characterization of the SARS-CoV-2 virus and the Coronavirus Disease 2019 (COVID-19), a comprehensive literature review. *Diagn Microbiol Infect Dis*. 2020;98(1):115094. doi:10.1016/j.diagmicrobio.2020.115094
16. Chen CC, Cho HS, Lee HH, Hu CJ. Efficacy of Repositioning Therapy in Patients With Benign Paroxysmal Positional Vertigo and Preexisting Central Neurologic Disorders. *Front Neurol*. 2018;9:486. Published 2018 Jun 29. doi:10.3389/fneur.2018.00486