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## **Decoding destiny — unveiling the risk factors that determine COVID-19 survival**

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## **Decoding destiny — unveiling the risk factors that determine COVID-19 survival**

**Short title:** Risk factors of COVID-19

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To the Editor,

we read with great interest the manuscript by Karim et al. [1] which investigates COVID-19 survival and mortality risk factors and their relationship with the demographic characteristics of the subjects diagnosed with the disease.

The COVID-19 pandemic has impacted millions of people worldwide, leading to significant morbidity and mortality [2, 3]. While most individuals experience mild to moderate symptoms, certain factors increase the risk of severe illness and death. Understanding these risk factors is crucial for identifying high-risk individuals and implementing targeted interventions.

Demographic factors play a significant role in COVID-19 outcomes. Advanced age, particularly for individuals over 65, is associated with higher mortality rates. This may be due to age-related declines in immune function and the presence of underlying health conditions. Gender disparities also exist, with males experiencing higher mortality rates compared to females, though the reasons behind this remain unclear [4].

Various pre-existing health conditions contribute to the risk of severe illness and mortality in COVID-19 patients. Conditions such as cardiovascular disease, diabetes, chronic respiratory diseases, and obesity are associated with worse outcomes, likely due to their impact on immune response and respiratory function. Immunocompromised individuals, such as those undergoing chemotherapy or organ transplant recipients, face heightened risks as well [5, 6].

Socioeconomic disparities have a significant impact on COVID-19 outcomes. Individuals from disadvantaged backgrounds often face increased exposure to the virus and have limited access to healthcare resources. Low-income individuals, essential workers, and those in densely populated areas are more susceptible to infection, resulting in higher morbidity and mortality rates [7, 8]. Racial and ethnic minority groups also experience disproportionate effects, with higher rates of severe illness and death observed.

Behavioral factors influence an individual's risk of contracting and experiencing severe COVID-19. Smoking, for instance, has been linked to worse outcomes, as it impairs lung function and increases vulnerability to respiratory infections [7]. Adherence to preventive measures, such as mask-wearing, physical distancing, and vaccination, significantly reduces the risk of severe illness and mortality.

Genetic factors may also contribute to the variability in COVID-19 outcomes. Certain genetic variations in the ACE2 receptor, the entry point for SARS-CoV-2 into human cells, have been associated with disease severity. Variations in genes related to immune response and inflammation may also impact an individual's susceptibility to severe illness [8, 9].

In conclusion, a complex interplay of various risk factors has an impact on COVID-19 survival and mortality [10]. Age, pre-existing health conditions, socioeconomic status, behavioral factors, and genetic factors all contribute to an individual's susceptibility to severe illness and death. Understanding these risk factors is crucial for implementing targeted public health strategies, including vaccination campaigns, prioritizing high-risk individuals, and providing support to vulnerable populations. Ongoing research should continue to explore the underlying mechanisms of these risk factors to enhance our understanding of COVID-19 and inform effective prevention and treatment strategies.

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**Author contributions**

Conceptualization, K.S. and M.K.; methodology, M.K.; formal analysis, M.K.; resources, M.K. and A.K.; writing—original draft preparation, M.K., K.S., and A.K.; writing—review and editing, M.K., K.S. and A.K.; supervision, M.K.; project administration, A.K. All authors have read and agreed to the published version of the manuscript.

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**Conflicts of Interest**

The authors declare no conflict of interest.