



# Prevalence of Generalized Tonic-Clonic Seizures in Hospitalized Iranian Patients with COVID-19

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## ABSTRACT

**Introduction:** The incidence of generalized tonic-clonic seizures (GTCS) in patients with COVID-19 has been of growing concern. Understanding this characteristics and biomarker profiles of this population associated with GTCS is essential for improving patient management and outcomes. This study aimed to evaluate the incidence of GTCS in patients hospitalized with COVID-19 and identify key biomarkers associated with this neurological manifestation.

**Methods and Materials:** A retrospective analysis was conducted on patients admitted to the Iranian population between April and September 2021. The study included two groups: case, consisting of patients with COVID-19 and GTCS, including 40 participants, and control, comprising patients with COVID-19 but without GTCS, including 80 participants. Demographic data, seizure episodes, hospitalization duration, and key biomarkers, including SpO<sub>2</sub>, blood sugar, sodium, and calcium, were collected and analyzed.

**Results:** The results showed that there can be a significant relationship between previous seizure history and seizures due to COVID-19. Also, people with a history of cerebral vascular accidents experienced a higher rate of GTCS. Significant findings suggested that patients with COVID-19 and GTCS were younger and had a shorter hospitalization duration than those without GTCS. The variations in key biomarker values between the two groups indicated potential associations of SpO<sub>2</sub>, blood sugar, sodium, and calcium with the occurrence of GTCS in COVID-19 patients.

**Conclusion and Discussion:** Our findings enhance the understanding of the clinical characteristics and biomarker profiles associated with GTCS in patients with COVID-19.

**Keywords:** Age, Biomarkers, COVID-19, Hospitalization, Seizures