

## The Effect of the COVID-19 Pandemic on Frailty, Sarcopenia, and Other Comorbidities in Liver Transplant Candidates: A Retrospective Review of an Extensive Frailty Database

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**Abstract :** Frailty is a multi-system impairment associated with stressors such as age, disease, and invasive surgical procedures. This multi-system impairment can lead to increased post-transplant mortality and functional decline. Additionally, the prevalence and/or severity of frailty increases when patient pre-habilitation is unsatisfactory or lacking. We conducted a retrospective study to examine whether the COVID-19 Pandemic, and subsequent lack of patient access to pre-habilitation and physical therapy resources, led to an increase in the prevalence and severity of frailty, sarcopenia, and other comorbidities including diabetes, hypertension, and COPD. Secondly, we examined the correlation between patient survival rate and liver frailty index as well as muscle wasting/sarcopenia. Data were analyzed in order to correlate variables associated with these parameters. Three hundred sixty-nine liver transplant candidates at Methodist Dallas Medical Center were administered pre-transplant frailty assessments, which consisted of chair stands, grip strength, and position balance time. A frailty score less than 3.2 indicated a robust condition, a score from 3.3 to 4.4 indicated a pre-frail condition, and a score greater than 4.5 indicated a frail condition. Greater than 50 percent of patients were found to have muscle wasting in the COVID-19 period (March 13, 2020 to February 28, 2022), an increase of 16.5 percent from the pre-COVID period (April 1st, 2018 to March 12, 2020). Additionally, sarcopenia was associated with a two-fold increase in patient mortality rate. Furthermore, high liver frailty index scores were associated with increased patient mortality. However, there was no significant difference in liver frailty index or number of comorbidities between patients in the two cohorts. Conclusion: The COVID-19 Pandemic exacerbated sarcopenia-related muscle wasting in liver transplant candidates, and patient survival rate was directly correlated with liver frailty index score and the presence of sarcopenia.

**Keywords :** frailty, sarcopenia, covid-19, patient mortality, pre-habilitation, liver transplant candidates

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