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The clinical frailty scale, but not the FRAIL checklist is associated with mortality in old critically ill patients with COVID-19

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Dear Editor,

Frailty is a clinical syndrome characterized by decreased reserve and resilience [1]. Identifying frailty in critically ill patients can help to guide management, including the selection of appropriate interventions and the development of care plans such as time-limited trials in patients with an unclear benefit from critical care.

The Clinical Frailty Scale (CFS) and the FRAIL checklist (1) are both tools proposed to assess frailty in older adults, but they have some key differences. The CFS is a simple, ordinal scale that assigns a score of 1 to 9 based on an assessment of the patient's level of frailty. It takes into account various physical and functional characteristics. It is quick and easy to use, and it has been validated in multiple settings [2–4]. The FRAIL checklist assesses

five domains of frailty: functional impairment, recurrent hospitalizations, advanced malignancy and chronic diseases, irreversible organ failure, and long hospital stay. Patients with one of these criteria were postulated to benefit from upfront discussions about limitations of care. The FRAIL checklist has recently been proposed as a screening tool for frailty in critically ill patients [5]. Patients with CFS > 4 and FRAIL > 0 are considered vulnerable and frail.

This study aimed to compare the FRAIL and the CFS in critically ill patients with COVID-19 aged 70 years and older by incorporating the new FRAIL checklist into the protocol of the COVIP study as described in *Critical Care* [2]. A total of 320 patients (median age 78 ± 6 years; 39% female; median SOFA score 5 ± 3, 3-month mortality 57%) were prospectively included in the new recruitment period of the COVIP study, with 31% (n = 99) having a FRAIL > 0 and 57% (n = 136) having a CFS > 4.

The FRAIL and the CFS correlated with each other (Spearman's rho 0.53; $p < 0.001$). Both the CFS (HR 1.14; 95% CI 1.04–1.24; $p = 0.004$) and FRAIL (1.21 95% CI 1.08–1.35; $p = 0.001$) were associated with 3-month mortality in the univariate analysis analyzed as continuous variables. Frail patients defined by both CFS > 4 (HR 2.01 95% CI 1.50–2.69; $p < 0.001$; Fig. 1A) and FRAIL > 0 (HR 1.46; 95% CI 1.04–2.03; $p = 0.03$; Fig. 1B) evidenced worse outcomes. However, after adjustment for age, gender, SOFA and the decision to withdraw/withhold treatment during the ICU stay, CFS > 4 (aHR 1.80 95% CI 1.29–2.53; $p = 0.001$) but not FRAIL > 0 (aHR 1.16;

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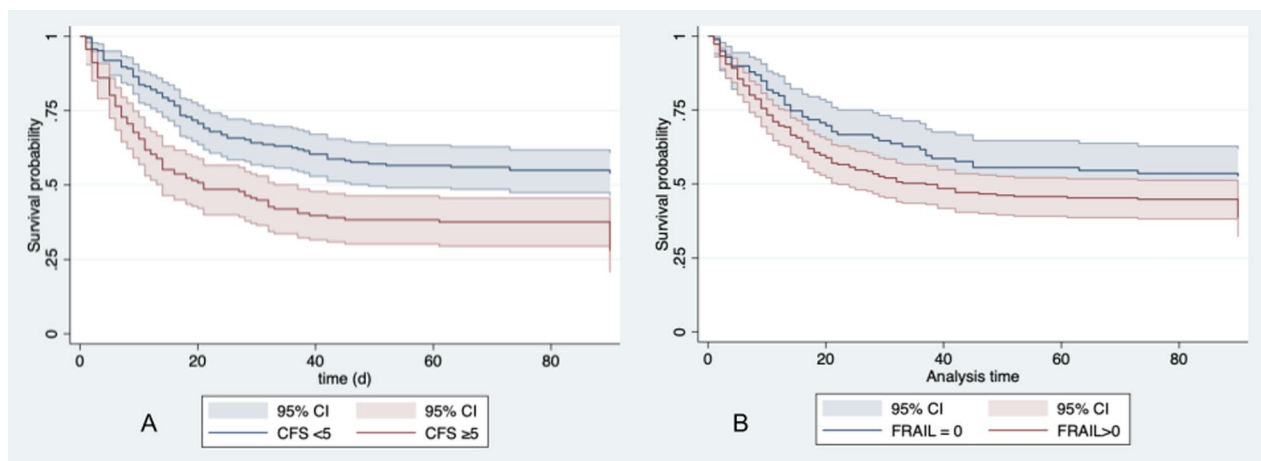


Fig. 1 Frail patients defined by both CFS > 4 (HR 2.01 95% CI 1.50–2.69; $p < 0.001$; **A** and FRAIL > 0 (HR 1.46; 95% CI 1.04–2.03; $p = 0.03$; **B** evidenced worse outcomes

95% CI 0.83–1.63; $p = 0.39$) remained associated with 3-month-mortality.

In summary, frailty is an important predictor of outcome in critically ill patients, regardless of the tool used to assess it. The FRAIL checklist identifies patients who will benefit from a time-limited trial, however, the ability to predict mortality is inherent in any critically ill patient evaluation tool. The CFS but not the FRAIL checklist was independently associated with mortality in old ICU patients. Therefore, we believe that in elderly ICU patients, CFS should be used to assess frailty because it also provides prognostic information.

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Author contributions

All authors revised the manuscript and approved the final version and were involved in designing the study as well as in data collection, analysis and manuscript drafting.

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Availability of data and materials

The datasets analyzed during the current study are not publicly available due to contractual restrictions but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Ethics approval for the observational studies was granted by Board at the University Hospital Duesseldorf as described earlier in this journal [2]. That included permission to access data. Then, each participating country had a national coordinator responsible for national or regional ethical and regulatory study approval. Informed consent was obtained if not waived by the local ethical approval. The research was carried out in accordance with the principles of the Declaration of Helsinki.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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