Effectiveness of telemedicine in patients with heart failure according to frailty phenotypes: insights from the iCOR randomised controlled trial

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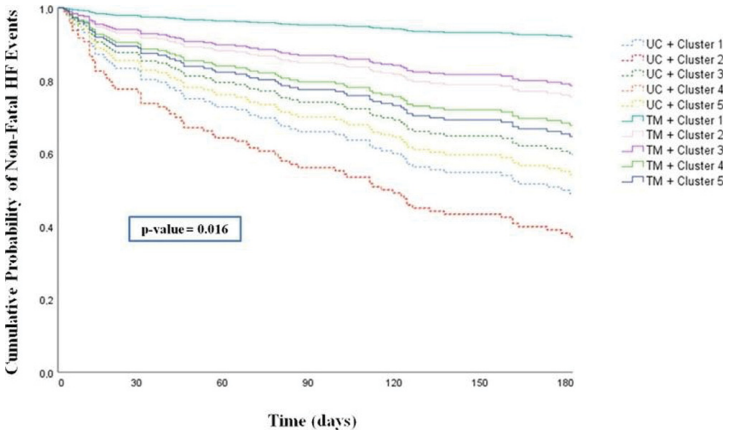
Background/Introduction: The potential impact of telemedicine (TM) in the monitoring of heart failure (HF) patients is still uncertain, largely due to the heterogeneity of the studies published to date. A subgroup of patients in which its key role is particularly uncertain is that of the frailest patients mainly due to TM-based strategies have been often discouraged on the basis of a foreseeable limited benefit in them.

Purpose: The aim of this study was to define the efficacy of a TM-based managed care solution across different HF patient frailty phenotypes in a cohort of HF patients recruited in a randomized clinical trial (The Insuficiència Cardíaca Optimització Remota [iCOR] study) evaluating the efficacy of a TM-based management compared to usual care (UC) in the early post-discharge period.

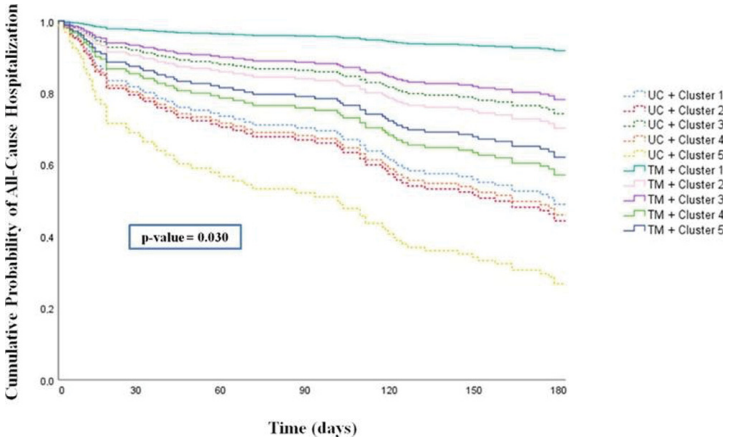
Methods: Five previously described frailty clusters were analysed. Cox proportional-hazards regression models were used to evaluate the effect of each cluster and group of treatment (and its interaction) on a series of endpoints (the incidence of non-fatal HF events as primary endpoint and all-cause hospitalization, all-cause death and the composite endpoint combining of all-cause death or non-fatal HF events as secondary endpoints). The incidence proportion of the first occurrence of each of the study endpoints was calculated for each study arm and for cluster, and these compared using χ^2 tests. Additionally, a survival analysis was conducted using Cox regression to describe the event-free survival experience of the combination of the clusters with each of the 2 treatment groups for the study endpoints evaluated, and p-value was used to compare the different curves.

Results: The positive effect of TM compared to UC strategy was consistent across all frailty phenotypes (p-value for interaction 0.711). The risk of experiencing a primary event was significantly lower in patients that underwent allocation to the TM arm compared to UC (p-value=0.016). As shown for the primary endpoint, the positive effect of TM compared to UC strategy was consistent across all frailty phenotypes also for the secondary endpoints (all p-value for interaction >0.05). Likewise, the risk of all-cause hospitalization or the composite end-point of all-cause death or non-fatal HF event was significantly lower in patients that underwent allocation to the TM arm compared to UC (p-value=0.030 and 0.016 respectively). However, the risk of all-cause death did not differ across subgroup strata (p-value>0.05).

Conclusion(s): This study showed that non-invasive TM-based follow-up tools are effective compared to UC in preventing fatal and non-fatal adverse events in the early post-discharge period, regardless of the 5 different frailty phenotypes. Importantly, when comparing TM-based follow-up with UC management in patients belonging to equal frailty cluster, those who were followed-up by eHealth had a considerably lower risk of non-fatal HF events, hospitalization or death.



Cox regression non-fatal HF events



Cox regression all-cause hospitalization