The effect of a mobile health technology integrated care across multimorbidity patterns in atrial fibrillation patients: a latent-class ancillary analysis from the mAFA-II randomised clinical trial

B. Corica¹, Y. Guo², G.F. Romiti¹, D.A. Mei¹, M. Proietti³, H. Zhang², G.Y.H. Lip¹

¹University of Liverpool, Liverpool, United Kingdom of Great Britain & Northern Ireland
²Chinese PLA General Hospital, Beijing, China
³University of Milan, Department of Clinical Sciences and Community Health, Milan, Italy

On behalf of mAFA-App II trial investigators

Funding Acknowledgements: Type of funding sources: Foundation. Main funding source(s): This research was funded by the National Natural Science Foundation of China (82170309). This study was an investigator-initiated project, with limited funding by independent research and educational grants.

Background: Multimorbidity confers an increasing health problem, especially with the progressive aging of the population. Hypertension, diabetes mellitus (DM), chronic heart failure (CHF) are highly prevalent and ultimately entails multimorbidity in patients with atrial fibrillation (AF), with detrimental effects on prognosis. The Mobile Health Technology for Improved Screening and Optimized Integrated Care in AF (mAFA-II) cluster randomised trial showed the efficacy of a mobile health implemented ‘Atrial fibrillation Better Care’ (ABC) pathway (mAFA intervention) for an integrated care management of patients with AF.

Purpose: Evaluate the effect of mAFA intervention according to the patterns of multimorbidity as identified through a latent-class analysis (LCA) approach.

Methods: The mAFA-II trial is a cluster randomised trial that enrolled adults AF patients between June 2018 and August 2019 in 40 centres in China. Clusters were randomised to mAFA intervention or usual care. We performed a LCA according to several variables (including age over 75, coronary artery disease (CAD), CHF, chronic kidney disease (CKD), DM, hypertension, peripheral artery disease and prior ischemic stroke), and modal posterior probability was used to define class membership of patients. The interaction between the effect of mAFA intervention and class allocation on the risk of the primary composite outcome of stroke, thromboembolism, all-cause death, and rehospitalizations was assessed through multivariable Cox-regression models, and results were expressed as adjusted Hazard Ratio (aHR) and 95% Confidence Intervals (95%CI).

Results: 3324 AF patients (mean age 68.5±13.9; 38.0% females) were enrolled in the trial and included in the analysis. We identified 3 comorbidity patterns, which differed according to prevalence of conditions and risk factors: (i) low morbidity pattern (n=1234, 37.1%), (ii) hypertensive/CAD pattern (n=1534, 46.2%), and (iii) mixed morbidity pattern (n=556, 16.7%). Overall, subjects in the mixed morbidity patterns were older, had a higher burden of diseases, and showed the highest prevalence of CKD, diabetes and history of stroke (Figure 1). Multivariable Cox-regression analysis showed a significant interaction between the effect of mAFA intervention and comorbidity patterns on the risk of the primary composite outcome (pint= 0.004), with the effect of mAFA intervention being greatest in the low morbidity pattern (aHR:0.08, 95% CI:0.02-0.32) and somewhat diluted in the mixed morbidity pattern group with a trend towards lower risk (aHR:0.69, 95%CI:0.37-1.28, Figure 2).

Conclusions: Multimorbidity is common and heterogeneous in AF patients. The effect of a mHealth-technology implemented ABC pathway appeared lower in magnitude in those patients with mixed morbidity patterns, suggesting that these patients require further interventions, aiming at addressing non-cardiovascular comorbidities and overall clinical complexity, to improve their outcomes.
Clusters distribution

Cox-regression models for interaction