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## **Fitness tracking wearable devices and a dedicated smart phone app (MySAwH App) to predict quality of life in PLWH: a multi-centre prospective study**

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### **Objective**

My Smart Age with HIV (MySAwH) is a multi-centre prospective ongoing study based on collection of physical function data and patient-related outcomes through a dedicated smart-phone app (MySAwH App). Our objective was to describe health changes assessed with frailty index (FI), collected by health professionals, and a health measure called intrinsic capacity (IC) index which explores 5 different health domains: locomotion, vitality, sensory, cognition, psychosocial. FI and IC were used to predict quality of life (QOL) and health score (HS) at follow-up.

### **Methods**

We included 261 PLWH >50 years from Italy (128), Australia (100) and Hong Kong (33). Baseline and follow-up (9 months) were performed. Frailty was measured with a 36-item FI, while 27-item IC index was self-assessed with fitness tracking wearable devices and a MySAwH app. QoL and HS were evaluated with EQ5D5L questionnaire.

### **Results**

Mean age was 56.94 years; 88.12% men. Median CD4 was 657 c/μL (480-817 IQR) and 252 (98.05%) patients had undetectable HIV viral load. Mean FI at baseline and

follow-up were 0.22 ( $\pm 0.1$ ) and 0.2 ( $\pm 0.09$ ) respectively,  $p < 0.001$ . Mean IC at baseline and follow-up were 0.69 ( $\pm 0.12$ ) and 0.71 ( $\pm 0.12$ ),  $p = 0.27$ . Median QoL at baseline and follow-up were 0.88 (0.8-1 IQR) and 0.9 (0.83-1 IQR),  $p < 0.03$ . Mean HS at baseline and follow-up were 7.6 ( $\pm 1.68$ ) and 7.63 ( $\pm 1.56$ ),  $p < 0.001$ . In a multivariate logistic model, predictors for a good HS at follow-up were baseline IC (OR=6.74, 3.86-11.77) and recruitment site (Hong Kong (OR=1.25, 1.01-1.54)). Predictors for QoL were baseline IC (OR=7.62, 4-14.51) and recruitment site (Hong Kong (OR=1.33, 1.05-1.69)).

## **Conclusion**

FI and IC are performative tools that can be used in research and clinical setting to describe respectively disease and health status in PLWH. IC score in comparison to FI displayed higher sensitivity to predict both QoL and self-perceived health in PLWH.