P56

Telerehabilitation in people with Parkinson's disease: results of the "Ricominciare" study

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Introduction: Tele-rehabilitation is a viable option to manage progressive disabilities. ARC-Intellicare (ARC) is a mobile device with 5 inertial sensors, a tablet with an App and an extensive library of exercises for motor and respiratory rehabilitation with real-time feedback.

Objective: "Ricominciare" is a pilot single-center, prospective, pre- and post study aimed at verifying feasibility and safety of ARC, at home of people with mild moderate motor and respiratory disabilities also due to Parkinson's Disease (PD). Secondary objective is to monitor evolution of patients' functional condition after rehabilitation.

Methods: People with PD and indication to outpatient or home rehabilitation, who met at least one of the following criteria, were eligible: i) dyspnea (Barthel dyspnea ≤95), ii) difficulties in walking or iii) in dexterity, or iv) Walking Handicap Scale (Perry and Garrett '95) score ≤ 5. The study protocol included 45 minutes/day (5 days/week, for 4 weeks) of respiratory and motor rehabilitation at home through ARC. Primary outcome measures were: System Usability Scale, adherence, adverse events. Secondary measures were: modified Barthel index, Barthel-dyspnea index, 2MWT, Brief Fatigue inventory, Beck Depression or Anxiety Inventory, quality of life, UPDRS, King's Scale, and PD Sleep Disorders scale.

Results: Eighteen pwPD (age range [57-76], 5 women) were enrolled. 22% needed support to use the device. SUS score was stable at 71/100 (±14). Adherence to exercise prescriptions was over 77%. After treatment, the independence in ADL (mBI; z=-2.3;p=.03), dyspnea (BI-D; z=-2.3;p=.01) and meters at the 2MWT (z=-2.1;p=.03) improved. Fatigue (BFI; z=2.8;p=.005), pain (KS; z=-2.1; p=.03) and anxiety (BAI; z=2.8;p=.007) decreased, while the Health Status (z=2.8;p=.005) improved. UPDRS part II (z=3.0;p=.002) and part III (z=2.1;p=.04) improved. No severe AEs were reported.

Conclusions: ARC was found to be acceptable, usable and possibly effective to manage disabilities in pwPD.