Development of a technical assistance system for older adults to improve mobility and nutritional status

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Summary

In the AS-Tra project we develop and evaluate an innovative technical assistance system for older adults (≥70 years) to improve their nutritional and mobility status and thus maintain independence in older age. The pilot study (n=10) is currently being carried out to test the independent use of the system over a four-week test period with the target group and to check the feasibility of data collection in preparation for the upcoming RCT study. After evaluating the data of the first five participants descriptively, the pilot study shows a SUS score of 81.7. In addition, a positive trend in the results of the MNA-SF and the SPPB can be seen. The MNA-SF score increased from 10.5 at the beginning of the 12 weeks to 13.0 after 12 weeks and the SPPB score increased from 7.6 to 8.5.

Introduction

Promoting a balanced diet and regular physical activity is crucial for maintaining independence in old age [1]. Technical assistance systems could help to identify health risks at an early stage, offer individualized interventions and thus maintain the independence of older people. The aim of the AS-Tra project is to develop and evaluate such an innovative technical assistance system (app and measurement and training station (MuTS)) for independent use by participants aged ≥70 years with nutritional and/or mobility deficits. The project is divided into three sub-studies, an iteration study which we already completed were we identified optimization potentials until good usability was achieved, we currently conduct a pilot study with a four-week test period examining data recording feasibility and system usability in preparation for a RCT study with a 12-week use of the assistance system (12 weeks) to determine its effectiveness in comparison to regular treatment.

Methods

The MRC framework for complex intervention development [2] was applied as follows: 1) Feasibility study to determine the context, using iterative test cycles with quantitative (System Usability Scale (SUS) [3], task fulfillment, time) and qualitative methods ("Thinking Aloud"). 2) Four-week pilot study (n=10) assessing usability and data recording, aligned with the transtheoretical model of behavior change. In order to measure whether the MuTS can influence the nutritional and mobility status, the Mini Nutritional Assessment – Short Form (MNA-SF) [4] and the Short Physical Performance Battery (SPPB) [5] were used at baseline and end. 3) 12-week randomized-controlled trial (n=124) to evaluate the effectiveness in changing nutritional and mobility status.

Results and Discussion

The pilot study, ongoing since 10/2024, has so far included data from the first five participants (81.4±3.2 years, 40.0% female), analyzed descriptively. The mean SUS score is 81.7±10.4. MNA-SF and SPPB values were measured at both the beginning (EG) and the end (T2). Overall both values show a positive trend: MNA-SF score improved from 10.5±2.9 at EG to 13.0±2.0 at T2, while SPPB score also increased from 7.6±1.3 to 8.5±1.9 at T2. In addition, the MNA-SF showed no more cases of malnutrition at T2 and more cases having a normal nutritional status. The SPPB also shows that in more cases more points were achieved at T2 than at EG (Figure 1).

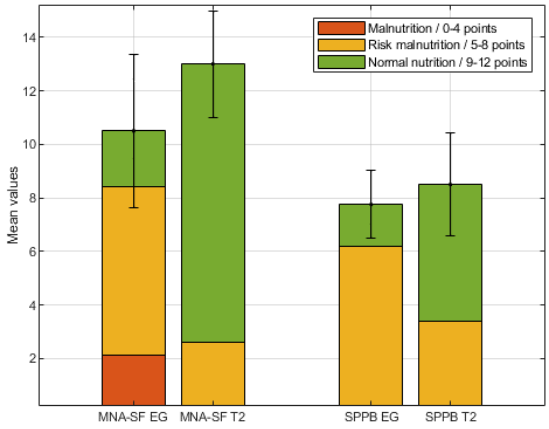

Figure 1: Mean MNA-SF and SPPB values at EG an T2 with standard derivation

Conclusions

An independently usable assistance system for testing malnutrition and mobility status with good usability was developed and is now being used in the pilot study. While no significant differences are expected between EG and T2 data, trends may suggest whether the MuTS can improve nutritional and mobility status and further potential for optimization can be identified. Full results of the pilot study will be presented at the congress.

References

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