

Can Clinical Assessments be Administered in a Remotely Delivered Clinical Trial Targeting Older Adults at Risk for Dementia?

A Steeves¹; P Jarrett^{1,2}; K Faig¹; CC Tranchant³; G Handrigan³; L Witkowski⁴; J Haché⁴; K MacMillan¹; A Gullison⁵; H Omar¹; C Pauley¹; A Sexton⁵; CA McGibbon^{5,6}

1. Horizon Health Network; 2. Dalhousie University, Faculty of Medicine 3. Université de Moncton; 4. Vitalité Health Network; 5. University of New Brunswick Institute of Biomedical Engineering; 6. UNB Faculty of Kinesiology

Background

- 40% of Alzheimer's disease and related dementias could be delayed by addressing modifiable risk factors¹
- Combining physical and cognitive exercise has been shown to improve cognition and mobility in older adults at risk for dementia, and may have a synergistic effect^{2,3}
- Less is known about the feasibility of administering such interventions remotely via videoconferencing to older adults at risk for dementia²
- This study assessed the feasibility of remote delivery of exercise and cognitive interventions to this population as well as the effect of the intervention on ADRD risk factors

Methods

- SYNchronising Exercises, Remedies in Gait and Cognition at Home (SYNERGIC@Home/SYNERGIE~Chez soi) (NCT04997681) is a home-based double-blind randomized controlled trial targeting older adults at risk for dementia
- Baseline assessments included measures of cognition, activity, mobility, diet quality, sleep, quality of life, and mental health
- Participants were randomized to 1 of 4 intervention arms consisting of 3 sessions per week of physical exercise and cognitive training for 16 weeks
- Participants were reassessed post-intervention and 6 months later
- Assessments were completed remotely via Zoom for Healthcare™ with a trained research nurse.
- Established guidelines from TCPS and Health Canada were used throughout the entirety of the trial

Results

Study Sample

- 72 participants consented and completed baseline assessments
- 60 participants were randomized to 1 of 4 intervention arms
- 48 participants completed the 16-week intervention and post-intervention assessments

Participant Characteristics

- Mean age 68.7 years (SD 5.7), 81% female, 73% English, 46% rural
- All participants had at least a high school level of education
- All participants had high health literacy scores
- 75% were cognitively intact with two or more risk factors for dementia

Table 1: Results of Assessments (N=48)

| Assessment Instruments | Participants | | | Assessment Characteristics | | |
|---|--------------|----------------|-------------------|----------------------------|----------------------------|--------------------------|
| | Name | Baseline | Post-Intervention | 6-Month Follow-Up | Mode of Delivery | Validated for Remote Use |
| Cognition | | Mean (SD) | Mean (SD) | Mean (SD) | | |
| Telephone Cognitive Screen | | 25.44 (0.80) | 25.54 (0.97) | 25.44 (0.90) | Remotely by Research Staff | No |
| Montreal Cognitive Assessment 8.1 Audiovisual | | 25.88 (3.37) | 26.56 (2.72) | 26.94 (2.94) | Remotely by Research Staff | Yes |
| Cognitive Function Composite 2 | | 11.86 (6.64) | 10.53 (7.26) | 9.29 (7.17) | Remotely by Research Staff | No |
| ADAS Cog Immediate Word Recall | | 8.33 (4.39) | 7.35 (4.68) | 6.67 (4.87) | Remotely by Research Staff | No |
| ADAS Cog Delayed Word Recall | | 2.83 (2.09) | 2.75 (2.23) | 2.15 (2.06) | Remotely by Research Staff | No |
| Activity | | | | | | |
| The Physical Activity Scale for the Elderly | | 116.96 (51.17) | 120.59 (55.83) | 120.24 (50.93) | Questionnaire Remotely | No |
| Mobility | | | | | | |
| Gait Speed | | 1.20 (0.23) | 1.19 (0.19) | 1.17 (0.19) | Remotely by Research Staff | No |
| Sit-to-Stand 30 seconds | | 9.81 (2.09) | 10.89 (2.29) | 11.06 (2.89) | Remotely by Research Staff | No |
| Sit-to-Stand 60 seconds | | 19.56 (4.17) | 21.70 (4.75) | 21.71 (6.02) | Remotely by Research Staff | No |
| Diet | | | | | | |
| Mediterranean Diet Assessment | | 6.08 (2.67) | 6.79 (2.49) | 6.43 (2.25) | Questionnaire Remotely | No |
| Sleep | | | | | | |
| Pittsburgh Sleep Quality Index | | 8.00 (3.83) | 7.66 (3.74) | 7.38 (3.50) | Questionnaire Remotely | No |
| Quality of life | | | | | | |
| Short-Form 36 General | | 67.77 (19.19) | 69.90 (20.62) | 69.44 (22.16) | Mailed Questionnaire | NA |
| Short-Form 36 Physical | | 70.10 (21.70) | 73.17 (21.20) | 72.60 (21.74) | Mailed Questionnaire | NA |
| Short-Form 36 Mental | | 75.65 (16.21) | 77.88 (15.54) | 76.62 (19.19) | Mailed Questionnaire | NA |
| Mental health | | | | | | |
| Geriatric Depression Scale | | 5.48 (4.50) | 4.85 (4.17) | 4.29 (4.72) | Questionnaire Remotely | No |
| Generalized Anxiety Disorder | | 3.94 (3.26) | 2.83 (2.91) | 3.42 (3.41) | Questionnaire Remotely | No |

Limitations

- The study was not powered to detect meaningful differences in any of the assessments

Conclusion

- Remote delivery of clinical assessments is feasible in the context of a clinical trial
- No statistically significant changes were observed in measures of cognition, physical activity, mobility, mental health, diet quality, sleep, or quality of life following the intervention in older adults at risk for dementia

References

1. Livingston G, Huntley J, Sommerlad A, Ames D, Ballard C, Banerjee S, et al. Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. *Lancet Lond Engl*. 2020;396(10248):413–46.
2. Montero-Odasso M, Zou G, Speechley M, Almeida QJ, Liu-Ambrose T, Middleton LE, et al. Effects of Exercise Alone or Combined With Cognitive Training and Vitamin D Supplementation to Improve Cognition in Adults With Mild Cognitive Impairment: A Randomized Clinical Trial. *JAMA Netw Open*. 2023 Jul 20;6(7):e2324465.
3. Raichlen DA, Bharadwaj PK, Nguyen LA, Franchetti MK, Zigman EK, Solorio AR, et al. Effects of simultaneous cognitive and aerobic exercise training on dual-task walking performance in healthy older adults: results from a pilot randomized controlled trial. *BMC Geriatr*. 2020 Dec;20(1):83.

Funding

- The SYNERGIC@Home Study is funded by the New Brunswick Healthy Seniors Pilot Project and the Public Health Agency of Canada
- Dr Jarrett holds a ResearchNB Clinical Research Scholarship that supports her work
- This study is supported by the in-kind contributions of the Canadian Consortium on Neurodegeneration in Aging (CCNA) with support by a grant from the Canadian Institutes of Health Research and additional funding from several partners, including the Alzheimer's Society of Canada.