



Transforming digital healthcare with voice-controlled rehabilitation programs for cognitive impairment



What is the focus of the research?

Investigating whether a personalised, voice-controlled rehabilitation program, delivered via Amazon's Alexa Show 8, can improve cognition in people aged 60 and over who have mild cognitive impairment or dementia.



Why is it important?

Everyday tasks can be difficult, confusing and sometimes even dangerous for someone living with dementia. This can negatively impact their physical and mental health, both of which reduce the ability to continue living at home.

The current telephone and videoconferencing methods healthcare providers use to deliver home-based behavioural programs have limitations. They're unable to monitor multiple patients' progress at once and many older

people with cognitive and/or visual impairments have difficulty using touch screens and other digital devices. People in remote areas and low-income households are further disadvantaged due to cost and poor internet connections.

Voice-controlled intelligent personal assistants (VIPAs) may be the solution. VIPAs can deliver personalised medication and appointment reminders, and assist people with mild cognitive impairment or dementia to carry out activities of daily living. Preliminary data suggests the use of Amazon's Alexa Echo Show 8 improved independence, companionship, mental health and medication adherence in older adults. However, no study to date has explored their feasibility or effectiveness in people with dementia or mild cognitive impairment.

Embedded in home speaker and video display units, Alexa can interpret human speech and provide voice reminders and instructions, prompting users to carry-out scheduled activities

throughout the day. It can also deliver regular feedback to the prescribing health professional.

Dr Jansons has developed innovative web-based software called Buddy Link. It allows healthcare professionals to select or create personalised, evidence-based rehabilitation programs to be delivered via VIPAs using conversation-based interactions.

This project will trial an Alexa-delivered personalised cognitive strategy program via Buddy Link for adults aged 60 and over who have mild cognitive impairment or dementia. If successful, Dr Jansons hopes this project will reduce healthcare inequalities in people living with dementia, by providing high-quality and cost-effective services to our underserved populations.



How will this happen?

Stage 1: consult healthcare providers, clinicians and older people with and without cognitive impairment for input on aspects of daily life that could be addressed by Alexa. Gather feedback on the intervention model, and potential barriers/facilitators, to inform implementation and scalability.

Stage 2: recruit 30 community-living adults aged 60-85 years with a recent diagnosis of dementia or mild cognitive impairment. Half to participate in the 12-week VIPA-delivered program; the other half to receive usual care.

Stage 3: participants and carers to complete standardised surveys on goal attainment, depression, cognition and everyday activities; and a follow-up telephone interview to assist with survey completion.



What will this mean for the future?

- Greater access to low-cost rehabilitation services for people with cognitive impairment.
- Potential for healthcare providers to help more people.
- Fewer barriers for people from rural or low-socioeconomic areas to overcome when accessing healthcare.

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We're hopeful that conversation-based digital rehab programs will help people anywhere in Australia continue to live independently. ”

— Dr Paul Jansons



Who's undertaking the research?

Dr Paul Jansons, Deakin University

Dr Jansons is a research fellow at Deakin University's Institute for Physical Activity and Nutrition. His research program has developed a world-first personalised lifestyle program using conversation-based interactions. It uses off-the-shelf technologies, which offer a low-cost, feasible and scalable method for delivering support to priority populations, including older adults with dementia and/or mild cognitive impairment.

Dr Jansons' program has provided much-needed data on how digital technologies can empower older adults, help health providers make better treatment decisions, and revolutionise our healthcare system with personalised digital medicine.

The title of Dr Jansons' project is *Feasibility and pilot randomised controlled trial of a co-designed home-based personalised rehabilitative strategy program delivered via Voice-Controlled Intelligent Personal Assistants in older adults aged 60 years and older with mild cognitive impairment and/or dementia.*

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