**Summary**

Dementia is a progressive, largely irreversible, clinical condition, characterised by global deterioration in intellectual function, behaviour and personality. It affects almost one million people in the United Kingdom1 and by 2050, 122 million global cases are expected. Dementia is both devastating and costly, with current UK healthcare costs of £26 billion annually2 and expected global costs of $2 trillion by 20303. 66% of these are individual care costs. My personal assistant for dementia (PAD), a smartphone or iPad digital application, provides a useful tool for individuals with early-stage dementia enhancing their positivity, wellbeing, confidence and independence.

**Research Aims**

This study aims to explore the potential benefits and disadvantages of a digital smartphone or iPad personal assistant application for people with early-stage dementia. It explores the use of orientation screens, daily reminders, medication prompts, active living, wellbeing activities, brain training, lost language aids, map functions and memory screens on positivity, wellbeing, confidence and independence in individuals with early-stage dementia.

**Epidemiology, Subtypes, Stages and Clinical Presentations of Dementia**

**Background Information**

Dementia defines over one hundred conditions that impair memory, behaviour and thinking, disrupting independent living4. Common dementia subtypes include Alzheimer’s, vascular, Lewy body and frontotemporal dementia. Dementia progresses from mild cognitive decline with memory issues and impaired speed of thought, language or behaviour, to late dementia, disrupting independent living.

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**Product Design and Methodology**

Orientation to day, date, year and time are included on the ‘Today’ screen, daily reminders and alarms on the ‘My Day’ screen and key contacts with photos, name, relationship and birthday on the ‘My contacts’ page. This screen also allows the person to record their own individual data including age, date of birth, address, email, phone number and NHS/NI numbers. A digital medication aid is included together with seated exercise, tai chi, pedometer and gentle dance functions. Maps and location services assist access to key destinations whilst ‘Groceries’ helps meal-preparation. A reverse dictionary facilitates lost language and a find my belongings tool. My personal assistant for dementia appears to be a valuable tool which was positively received by those with early-stage dementia. A home screen was favoured over mobile app technology by those with early-stage dementia. All individuals with early-stage dementia valued the orientation, diary, contacts, medication and exercise screens and all enjoyed brain training, relaxation, music and memory functions. 20% made use of the safety lanyards and 66% valued the waterproof, smash-proof casing. All those who used PAD reported a greater sense of orientation, well-being and confidence.

**Analysis & Conclusions**

The impact of digital health on patient care is accelerating rapidly with increased use of mobile health apps and wearable sensors. This study shows that a personal assistant for dementia is a valuable tool for people with early dementia, facilitating wellbeing, orientation, confidence and independence. Proposed PAD extensions included art, zoom, remote access to GP, pharmacy, volunteer and dementia specialists, cultural event virtual links, wandering alarms and falls alerts together with links to electronic medication aids and physical health monitoring aids. Inclusion of voice activated commands and spoken instructions, Bluetooth facility, increased remote access, map memory function for common routes and increased alarms were suggested. It would be useful to extend my PAD design to commercial app software and repeat this study in a larger sample size of individuals with broader characteristics over a longer time period. Validated quality of life questionnaires, screen time measurements and inclusion of a control study group would be helpful.