The identification of assistive technologies being used to support the daily occupations of community-dwelling older adults with dementia: a cross-sectional pilot study (2014)

Disability and Rehabilitation: Assistive technology, 9(1), 17-30

Boger, J., Quiraish, M., Turcotte, N., & Dunal, L.

Abstract

Purpose: Assistive technologies (ATs) have tremendous potential to support occupations (i.e. meaningful daily activities) impacted by changes in cognition caused by dementia. However, little is known about what or how ATs are in use in community settings. This research created and piloted guided interviews intended to capture what ATs are in use, factors that affect use and gaps in support from multiple stakeholders.

Method: Family caregivers (n = 3) and occupational therapists (n = 10) were chosen as pilot respondents because of their relationship to care provision, understanding of how occupations are impacted by changes in cognition and role in AT procurement. Data were analyzed using descriptive statistics.

Results: The interviews' structures enabled data to be grouped into distinct categories and organized easily. The data illustrated the types of analysis that could be done given a larger sample size. It appeared that interviews captured ATs that were in use, as well as areas of non-use and perceived difficulties. Respondents identified several unmet needs and provided suggestions for desired outcomes.

Conclusions: While the interview guides must be refined and validated, they are able to capture rich and comprehensive data that could be used by multiple stakeholders, such as clinicians, engineers and caregiver education groups, to target AT development, procurement, education and policy.

Implications for Rehabilitation

• Structured interview guide developed and piloted that could be used to identify ATs in use in the community to support older adults with dementia from the viewpoints of multiple stakeholders.

• These data could be used to: gain an understanding of AT use and non-use, discern differences in perception between the various stakeholders, and guide development, procurement, education and policy efforts.
First steps in designing a videophone for people with dementia: identification of users’ potentials and the requirements of communication technology (2012).


Abstract

Purpose: To identify, based on the literature, people with dementia’s potentials to manage an easy-to-use videophone, and to develop a videophone requirement specification for people with dementia.

Method: The study is based on the Inclusive Design method, utilising the first two of four phases. Content analyses of literature reviews were used to identify users’ potentials for managing a videophone and to gather recommendations regarding communication technology design for the target group. Existing videophones in Sweden were examined regarding potential fit to users with dementia.

Findings: This led to detailed identification of cognitive, physical and psychosocial challenges that people with dementia will probably have when using an ordinary telephone or videophone. A requirement specification for videophone design to fit users with dementia was formulated, with the seven principles of Universal Design as a framework.

Conclusions: The requirement specification presented here is aimed at designing a videophone but might also facilitate design of other products for people with dementia, particularly in the field of communication technology. Based on this, further work will focus on developing a design concept and a prototype to be empirically tested by people with dementia and their significant others, i.e. the final two design process phases.

Implications for Rehabilitation

• Before recommending the use of assistive technology or new products such as a videophone it is important to examine in detail how well the product can meet the person’s abilities and needs.

• If people with dementia and their significant others receive information about new products or assistive technology that could be useful for them in an early stage of the disease process they might be willing to use it.

• In order to facilitate acceptance and use of new products such as a videophone, the design should aim at resembling other well known similar products and people with dementia should be introduced to using it at an early stage of the disease.
Usability of a new electronic assistive device for community-dwelling persons with mild dementia (2012)

Aging and Mental Health, 16, 5, 584-591


Abstract

Objective: To evaluate a newly developed integrated digital prosthetic, the COGKNOW Day Navigator (CDN), to support persons with mild dementia in their daily lives, with memory, social contacts, daily activities and safety.

Methods: A user participatory method was applied in the development process, which consisted of three iterative 1-year cycles with field tests in Amsterdam, Belfast and Luleå. In the successive cycles 16, 14 and 12 persons with dementia and their carers participated. Data on usability were collected by means of interviews, observations, questionnaires, logging and diaries. The CDN prototype consists of a touch screen, a mobile device, sensors and actuators.

Results: The evaluation showed that persons with dementia and carers valued the CDN overall as user-friendly and useful. Conclusions regarding the effectiveness of the system in daily life were limited due to insufficient duration of the testing period caused by delays in development and some instability of the final prototype.

Conclusion: With the suggested adaptations, the CDN is expected to be a useful tool for supporting community-dwelling persons with mild dementia and their carers.
What should be in a self-management programme for people with early dementia? (2012)

Aging and Mental Health, 16(50, 576-583)

Mountain, G. A., & Craig, C. L.

Abstract

Objectives: First, to use participative research methods to obtain views from people with dementia and carers about their experiences and the interventions that they consider can assist in facilitating independence and quality of life post diagnosis. Second, to use these views to identify priority topics for a potential self-management programme. Third, to explore the relevance of the identified topics with a consultation group of people with dementia and their carers, thus informing the creation of a draft self-management programme.

Methods: A series of individual and dyad interviews were conducted with people with dementia and family carers to explore their experiences post diagnosis and obtain views of how quality life can be maintained while living with dementia. A further group of people with dementia and carers then met over six successive weeks to explore and provide feedback on the topic areas generated out of the initial interviews and add to the content.

Results: Data generated from the individual interviews identified a number of themes for a potential self-management group which were then validated through consultation. Optimum modes of delivery of a self-management programme were also indicated.

Conclusions: A draft programme has been constructed building upon the framework of identified priorities. The process and outputs from the consultation also indicated the significant ramifications of such a programme for services.
The meaning of everyday technology as experienced by people with dementia who live alone (2008)

Nygard, L.

Dementia, 7(4), 481-502.

Abstract

This study explored how people with dementia who live alone experienced the meaning of their everyday technology, such as telephones and electronic equipment, and the use of it. Eight participants with mild to moderate stage dementia were included. Repeated interviews and observations were undertaken in each participant's home and surroundings. A phenomenological, interpretative method was adopted in the analysis. In summary, the participants experienced their everyday technology to be embedded with both practical and existential meaning, as it could assist them in different ways in daily life as well as support their perception and presentation of themselves. Although important, habit and familiarity did not seem to provide them with enough support to continue using technology, unless the technology was experienced as very significant and incorporated in a bodily experience through continuous and very frequent practice. The abundance of experienced meanings and the significance of the technology in the participants' lives call for further studies in order to better understand the conditions for managing everyday technology in home and society and, when relevant, to facilitate technology use in people with dementia.
Keeping In Touch Everyday (KITE) project: developing assistive technologies with people with dementia and their carers to promote independence

Robinson L., Brittain, K., Lindsay S., Jackson D., and Olivier P. (2009).

International Psychogeriatrics, 21(03), 494-502

Abstract

**Background:** The role of technology to facilitate independent living for people with dementia is not fully realized, with initial attempts (e.g. tracking devices) being considered unacceptable from a practical and ethical perspective. The aim of this study is to create acceptable and effective prototype technologies to facilitate independence for people with dementia through a user-centered design process involving them and their carers.

**Method:** The study comprised a three-stage participatory design process: scoping stage (five focus groups, 10 people with dementia and 11 carers); participatory design stage (five workshops, 22 participants) and prototype development stage (four meetings with two people with dementia and one carer). Focus groups and workshops were digitally recorded, fully transcribed and subjected to constant comparative analysis.

**Results:** People with mild to moderate dementia enjoy a variety of activities both on their own and with their families; however, concerns included getting lost, a loss of confidence with curtailment of usual activities, and carer anxiety. Existing technologies (mobile phones) were used intermittently. Participants felt strongly that future devices should be disguised and be integrated easily into their daily routines. Suggested areas for functional improvement included two-way communications, flexibility of function as the illness progresses, and something to “guide” them home when out walking or driving. Attention should also be focused on minimizing the size, weight and visibility of devices to reduce stigmatization.

**Conclusion:** Prototypes for two devices (armband and electronic notepad) were developed. The study showed that involving people with dementia in the process of participatory design is feasible and could lead to devices which are more acceptable and relevant to their needs.
Description of retained abilities in older persons with dementia.


*Research in Nursing & Health, 23*(2), 158-166.

Abstract

There have been suggestions in the literature that the care of people with dementia must be focused on abilities as opposed to disabilities. However, this approach has not been carefully defined in terms of what constitutes remaining abilities. This article provides a description of the abilities in people with dementia, which is based on a descriptive analysis of data derived from a larger study regarding the psychometric evaluation of an abilities assessment instrument. The sample comprised 112 male veterans with dementia who were living in a long-term care facility. Their mean age was 75 years. Data were collected in the areas of self-care, social, interactional, and interpretive abilities. Abilities were retained in all four areas. Furthermore, abilities were differently affected and varied considerably across subjects, which is consistent with evidence pertaining to cognitive changes in dementia. Our results provide support for an individualized, abilities-focused approach to the care of people with dementia.
Involving older people with dementia and their carers in designing computer based support systems: some methodological considerations

Arlene Astell, Norman Alm, Gary Gowans, Maggie Ellis, Richard Dye, Phillip Vaughan

Published online: 29 May 2008

Abstract

Older people with dementia are a particularly challenging user group to involve in the process of designing interactive systems that could assist them. It may also be difficult to involve family caregivers of people with dementia, as they are most likely to be older themselves and uncertain about technology. Paid care staff, whilst younger, may be unclear about the benefits of technology and lack confidence in their ability to incorporate it into their work. Over the past 7 years, the authors of this paper have worked closely with people with dementia, their families and professional care staff to develop and evaluate a multimedia computer system to support communication between people with dementia and caregivers. To achieve this, a number of user involvement issues were addressed, ranging from legal and ethical considerations of working with people with dementia to the reluctance of hard-pressed staff to add to their workload for a research project. In addition, developing and conducting evaluations and eliciting the views of people with dementia who have working memory impairment plus additional cognitive and social difficulties emerged as a central issue. A variety of approaches were explored within this project, which are described in this paper, including familiarizing the whole team with the unique difficulties posed by dementia, continuous confirmation of participants’ consent, and ways to measure enjoyment, engagement, and joint interaction using observation.
REAFF - A framework for developing technology to address the needs of people with dementia

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Abstract

As the number of older people with a diagnosis of dementia continues to grow, the potential for developing technological solutions to the problems they face is increasingly being recognised. This paper describes the REAFF framework, a set of principles to guide the development of technology to support people with dementia. The framework has evolved from experience developing computerised technology to address psychosocial needs but the principles have broader application across all areas of technological development to support people living with a diagnosis of dementia.
Technology and personhood in dementia care

Arlene J. Astell

Abstract

Modern dementia care is increasingly turning to technology to address a wide range of issues. Such developments are argued to improve quality of life, as, for example, technological interventions that reduce risks and increase safety can enable people with dementia to stay in their own homes for longer. However, all interventions in dementia care must strike a balance between doing what is perceived to be for the best and preserving the personhood of people with dementia. Technological interventions run a particularly high risk of crossing the line into doing things to people with dementia, rather than with them. Doing things for people with dementia is also problematic if it takes away their ability to do things for themselves. These issues are examined with reference to electronic tagging, assistive or ‘smart’ technology and interventions to address the psychosocial needs of people with dementia.
Using a touch screen computer to support relationships between people with dementia and caregivers

Arlene J. Astell, Maggie P. Ellis, Lauren Bernardi, Norman Alm, Richard Dye, Gary Gowans, Jim Campbell

Abstract

Progressive and irreversible cognitive impairments affect the ability of people with dementia to communicate and interact with caregivers. This places a burden on caregivers to initiate and manage interactions to the extent that they may avoid all but essential communication. CIRCA is an interactive, multimedia touch screen system that contains a wide range of stimuli to prompt reminiscing. The intention is that people with dementia and caregivers will explore CIRCA together, using the recollections sparked by the media as the basis for conversations. This paper reports an evaluation of the utility of CIRCA looking particularly at whether CIRCA can meet the needs of both people with dementia and caregivers to engage in mutually satisfying interactions. The findings confirm that people with dementia can use the touch screen system and that the contents prompt them to reminisce. The system also supports caregivers to interact with people with dementia as more equal participants in the conversation. The results suggest that interacting with the touch screen system is engaging and enjoyable for people with dementia and caregivers alike and provides a supportive interaction environment that positively benefits their relationships.
Technology and fun for a happy old age


By Arlene J. Astell

Abstract

The past 20 years has seen a rise in the development and production of technologies to support older people. These have typically focused on issues related to safety and security and to reduce the risk of hospitalisation (e.g. fall detection devices). Despite their undoubted importance, it could be argued that these aspects of ageing have received more attention than is warranted and as a consequence have unduly influenced the direction of technology development for the ageing population. While much less attention has been paid to technology to support people to live well and experience the things that make life worth living, the available evidence suggests that technology can provide older adults with meaningful and engaging activities that are stimulating, enjoyable and fun. This chapter provides a brief examination of this evidence for the ageing population in general then considers the application of technology for that sector of the ageing population who are living with dementia. The context is provided by positive psychology, an approach to human behaviour that seeks to promote the good things in life.
Digital Video Games for Older Adults with Cognitive Impairment

Arlene Astell, Norman Alm, Richard Dye, Gary Gowans, Philip Vaughan, and Maggie Ellis

Abstract.

Digital video games offer opportunities for older adults with cognitive impairment to engage in meaningful activities. However, to achieve this benefit digital video games are needed that take account of the players’ cognitive impairment. This paper reports work with older adults with cognitive impairment due to dementia to find out how they can best be prompted to initiate and play games independently, what sorts of digital video activities they like to play, and if playing digital video games is engaging. The results demonstrate that older adults with cognitive impairment can learn to play new digital video activities and can be prompted to play independently through visual and auditory cues. Their behaviour indicates features of Flow similar to that reported in other gaming studies.