

Home-Based Assistive Technologies for Elderly: Attitudes and Perceptions

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This study aim is to explore the perceptions of seniors in regard to “smart home” technology aiming to improve their quality of life and/or monitor their health status. A total of 15 older adults participated in three focus groups. Participants had a positive attitude towards these technologies and identified application areas such as emergency help, detection of falls, monitoring of physiological parameters. Concerns were expressed about privacy and the need for tailored training.

Introduction

The aim to meet older adults’ desire to remain independent at home while controlling home health care costs has led to the development of “smart home” or assistive technologies. A smart home is a residence equipped with technology that enhances safety of patients at home and monitors their health conditions.

Several pilot projects have introduced “smart home” technologies both in the US and Europe. Such projects utilize solutions for elderly with mobility impairments and/or cognitive disabilities. Devices and sensors control lighting, windows, doors, locks, water outlets, electrical power and stove, as well as visual and tactile signaling devices. Within our study, an interdisciplinary team is conducting a needs assessment that will provide the blueprint for the design of a non-obtrusive monitoring system consisting of devices and sensors to address the needs and concerns of older adults. This design will be integrated in Tiger Place, a 34,000 square foot facility developed by the University of Missouri-Columbia with Americare Systems, Inc., of Sikeston, Missouri. Emphasis has been placed on a state of the art building and apartment design that supports independence, therefore helping residents to age in place.

This study aims to assess seniors’ attitudes towards and perceptions of “smart home” technologies, their advantages and disadvantages, possible concerns and overall perceived utility. Furthermore, we aim to determine the areas of daily living that seniors identify as appropriate for such assistive interventions.

Methods

We conducted a series of focus group sessions to assess older adults’ perceptions and expectations of the technology. The sessions were audio taped for later analysis by team members. The focus group protocol included questions about participants’ current experience with technology, and their perceptions of the usefulness of devices and sensors in health related issues. The audiotapes were transcribed and a content analysis using the software package QSR N6 was performed.

Results

We conducted 3 focus group sessions with 15 older adults. All participants were over the age of 65. Seven participants were male and eight were female.

Most participants (14) had some experience with personal computers and portable devices. Areas that were identified as potential application domains for advanced technologies included emergency help, detection of falls, and monitoring of vital signs. Concerns were expressed about devices’ user-friendliness, a potential lack of human response and the need for customized raining. The findings indicate that technology can enhance home monitoring if designed to address residents’ needs rather than to simply follow technological developments. Based on this study, 3 main technology components are currently investigated: (1) a monitoring system incorporating gait, physiological, and environmental sensors; (2) an event-driven video sensor network generating silhouette images of the residents; (3) sensor and video data fused and processed for identifying patterns of behavioral activity.