

Opportunities for ubiquitous computing in the homes of low SES older adults

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ABSTRACT

Eight hour contextual observations have been conducted in the homes of 5 low socioeconomic status (SES) urban-dwelling older adults. The purpose of the observations was to understand the daily needs and challenges of older adults in order to design appropriate technology that can allow older adults to age-in-place (age at home). The long term goal of the study is to develop a suite of age-in-place technologies tailored to the lifestyle needs of low SES urban and rural-dwelling older adults. This paper presents initial findings and discusses how this ongoing research will be used to inform the design of future age-in-place technologies.

Author Keywords

Health, home, age-in-place, guidelines, low SES, urban, telecare

ACM Classification Keywords

K.4.0 Computers and society: General.

General Terms

Design, Human Factors

INTRODUCTION

In 2008, 39 million older adults age 65 years and older resided in the United States [1]. Of that 39 million, 19% of men and 40% of women lived alone [1]. Older adults in this age range have a high risk of developing various chronic conditions such as heart disease, diabetes, arthritis and hypertension [1]. In addition to these conditions, older adults living in urban areas often experience some type of functional loss [2] that may require relocating to assisted living facilities. Unfortunately, many low socioeconomic status (SES) urban-dwelling older adults cannot afford assisted living or formal caregivers. In 2007, 3.6 million older adults, age 65 years and older, lived in poverty [3]. One way to help older adults stay in their homes longer and receive necessary health assistance is to develop home technologies that meet their daily needs and challenges. Few research in the ubiquitous computing community has focused on creating age-in-place technology [4, 5], and even less has focused on designing age-in-place technology for low SES urban and rural-dwelling older adults. This research aims to get a better understanding of low SES older adults' daily routine and unmet needs to uncover design opportunities for

future home technologies.

METHODS

Participants

Participants were 5 urban-dwelling older adults between the ages of 76 and 78. All participants lived alone in an apartment or single-family house, were retired, and had an annual income less than \$20,000. Low SES was determined using 200% of the federal poverty level [6].

Procedure

To get a better understanding of older adults' daily routine, and to discover the types of unmet needs that may be present, 8-hour contextual observations were conducted at each of the participant's home. After obtaining informed consent, participants' demographics and technology inventory were collected. Semi-structured interviews lasted approximately 45 minutes and were audio recorded. Field notes and documentary photographs were taken throughout the contextual observations. At the end of study, participants were debriefed, thanked for their participation, and remunerated \$80.

INITIAL FINDINGS

As contextual observations and interviews continue, a noticeable trend is emerging that provides insight into older adults' health perception as it relates to assistive technology use.

Positive health perceptions affect technology use

To get a better understanding of older adult's perception of their health, we asked each participant to rate the status of their current overall health as compared to other older adults within their age range, using a 5 point Likert scale. Overall, the older adults believed their health was good when compared to people their age.

"I think I'm good [considering] other people my age. Most [people] my age don't do anything. I know a lady, she's the same age that I am. She sits around the house, doing nothing."(P5)

Most of the older adults (3 of 5) rated their overall health as good. One participant felt that his overall health was excellent, while another believed her overall health was fair. Interestingly, the interviews revealed that although the older adults were satisfied with their overall health, they reportedly experienced serious medical emergencies and surgeries. For example, two participants had a stroke that resulted in each

moving out of their previous homes and into their current dwellings. As a result of the stroke, participant 4 is blind in one eye, and participant 3 has serious anxiety issues. The pair also has shaky hands as a result of their strokes, thus making it difficult for either to write. However, both participants perceived their health as good. Participant 1 also perceived her health as good when compared to others, even though she had several health conditions and surgeries.

"I've had colon cancer... I have [hypertension]. I've had a heart attack... arthritis already got set in after surgeries. I've had several surgery operations. I've had a tumor in my thyroid ... I've been to hospital just two weeks ago, I had a hemorrhage." (P1)

Despite experiencing dramatic medical emergencies, the participants still perceived themselves as being healthy and independent. This perception seemed to have an effect on the types of technologies older adults chose to utilize. All of the older adults reported having general technologies such as televisions, radios, landline telephones, and cell phones. None of the older adults reported having assistive technology such as canes, wheelchairs, grab bars, or personal emergency response systems (PERS). However, during the contextual observations, we observed that most of the participants (4 of 5) actually had assistive technologies such as grab bars near the bathtub, shower, or toilet. We also observed that participants had eating aids, dressing aids (e.g. shoe horn, a device that helps shoes easily slip on), and "reachers" or "grabbers" stored away in closets and containers. When specifically asked about their assistive technology, participants stated that they did not use them.

"I have one [grabber/reacher]... It's in the utility room but I don't use it. Not yet." She went on to say, *"They [doctors] have talked about it [PERS] when I first had the stroke but I didn't follow through on it. Not yet."* (P4)

A notable finding is that the participant was not opposed to using assistive technology; she simply believed that there was not a current need.

"Unless it's really necessary and I'm not trying to prove anything to anyone but as long as I'm able to do all the stuff in life, it's not that I would be embarrassed but I want to do what I can for myself as long as I can." (P4)

Current literature proposes that older adults choose not to use assistive technology because of negative stigmas[7, 8]. However, based on these preliminary findings, low SES older adults may not choose to use assistive technology, not because of the negative stigmas, but rather because they personally believe they are healthy and independent. They may simply have such a positive self-perception of their health that they tend to not use the technology.

CONCLUSION

This paper has explored low SES urban-dwelling older adults' health perception as it relates to assistive technology use. This study was limited to a small amount of perspectives from low SES urban-dwelling older adults.

More interviews and observations will be conducted to have findings generalizable across this specific population. Furthermore, to fully understand how to design age-in-place technologies for low SES urban and rural-dwelling older adults, focus groups with older adults, caregivers, and community stakeholders will be conducted. Findings from this research will hopefully facilitate the future design of age-in-place technology for the ubiquitous computing community.

ACKNOWLEDGMENTS

This material is based upon work supported by the National Science Foundation under award number 1117860. Any opinions, findings, and conclusions or recommendations expressed in this presentation are those of the author(s) and do not necessarily reflect the views of the National Science Foundation. We would also like to thank the Center for Law, Ethics and Applied Research in Health Information, the School of Informatics and Computing, Robyn Evans, and the participants for their help.

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