ACCEPTANCE OF GEROTECHNOLOGIES BY OLDER WOMEN IN RURAL AREAS

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INTRODUCTION AND BACKGROUND

Technology has the potential—positively or negatively—to change forever the way we age in our environment. The application of technologies to aging in place must be determined with knowledge of contextual issues and individual preferences. Concerning technology, people are more or less knowledgeable, more or less skilled, more or less avoidant of learning how to engage in technological innovation, and more or less accepting of new approaches to living. Moreover, people may be required to adapt to new technologies while simultaneously coping with changes in physical, social, and cognitive resources. In order to best use technologies to support aging in place, it is essential to understand elders' skills, attitudes, and preferences and the context in which they make decisions.

How much technology, testing, and intervention are people willing to tolerate to increase their safety, comfort, and independence in their later years? A myriad of exciting new monitoring and communication technologies are in development; however, successful implementation is dependent upon a solid foundation of understanding of the social context and key issues of the stakeholders [1].

New research focused on the use, acceptance, and satisfaction of innovative technologies that may enhance living for older adults is urgent [2], and it is crucial that behavioral and social scientists work hand-in-hand with technology developers in this research [3]. Luborsky [4] stressed the importance of understanding social, cultural, and ethical differences in understanding technology usage by seniors and pointed out that culture and personal biography shape the course of technology acceptance at the individual level. Not all effects of the introduction of a new technology are likely to be planned or even anticipated when the technology is designed. It is likely that an entirely different pattern than those discovered for more conventional devices will emerge [5, 6, 7].

It is especially important that research target underrepresented groups. Rural women in particular have unmet needs because health and social services are often not found in close proximity to their residence. Older women are at a higher risk than older men of living alone, have higher rates of disability, and as a result are more likely to need support to remain independent [8]. In Oregon, over one third (36.2%) of older women live alone, while only 16.2% of older men live alone [9]. Technology has great potential to assist in monitoring and preventing disease, enhancing quality of life, and extending the time living independently.

METHODOLOGY

Overview

This is a qualitative study designed to explore attitudes and values of rural older women towards selected monitoring and communications technologies. Rural women are particularly likely to benefit from technological innovations in their homes that maintain and/or increase autonomy and maximize time in independent living.

Focus groups are conceptualized as group interviews in which discussion and group interaction revolve around a topic specified by the research team [10]. This methodology is designed to produce insights that might not be available through individual interviews. Additionally, they are particularly useful for getting in-depth insights in areas that are new and among populations that have not previously been studied [10]. For this study, four focus groups were conducted in four rural Oregon communities.

Participants

Participants were recruited from existing local chapters of the Oregon Family and Community Education (FCE) organization, a group that has deep roots with the OSU Extension Service Family and Community Development Program. The average age of these women is 75 years, and approximately 1,000 FCE members are distributed throughout the state. The four focus groups took place in communities with populations from 1,800 to 5,800 in localities across the

state, in recognition of the diverse subcultures and physical environments of Oregon, ranging from mountainous rain forest to high desert.

Forty-three older adult women, ages 60-85, participated in four focus groups each consisting of 9 to 12 participants. The majority (81%) reported good to excellent overall health and the same number were currently or had been in a caregiving role for an older adult. Most were married or living with a partner (65%). Forty percent had a high school education, while 25% had some college or vocational training; 16% were college graduates; and 16% had graduate or professional degrees. Participants reported annual income levels as follows: less than $15,000, 15%; from $16,000 - $25,000, 18%; from $26,000 - $50,000, 33%; $51,000 - $75,000, 25%; more than $75,000, 2%.

Procedure

The purpose of this study was to identify the interests and concerns of older rural women regarding monitoring and communications technologies. In an earlier study [11], researchers found that older adults had difficulty imagining the application of technology concepts in their day-to-day lives. To overcome that obstacle, a series of vignettes were developed, professionally filmed, and used as discussion stimuli in the current study. In the vignettes, an older woman was seen living alone with the assistance of four related technologies: a medication reminder and dispenser, a video telephone, and an activity monitoring/emergency response system.

To control for possible order effects, the presentation order of the four vignettes was rotated. The facilitator initiated discussion designed to elicit what group members thought of the technology, explored conditions under which the technology would be accepted into their home, and considered individuals with whom the elder would be willing to share the information produced (e.g., neighbors, family members, health care providers). The same procedure of showing the video of the technological innovation as stimulus, and then facilitating discussion among the women, was followed for each of the four vignettes

The discussions were conducted by female facilitators trained to focus on the concepts behind each technology rather that the specific design of devices portrayed in the vignettes.

Data Collection and Analysis

Data collection took place in 2006. The four focus groups were video and audio taped and transcribed for systematic analysis. Qualitative content analysis techniques [12, 13] were used to guide the coding of the focus group data to discover prevailing manifest and latent themes.

RESULTS AND DISCUSSION

Overall, the rural participants expressed an open attitude toward learning about gerotechnologies and using them in their homes. They all reported using common technologies such as a microwave, CD player, answering machine, and all but one had access to a computer. Participants used their computers frequently: daily (71%) or several times a week (8%). The majority (77%) reported sending or receiving e-mail regularly and used the internet daily (30%) or weekly (21%).

Participants were intrigued by the potential of communication technologies that would allow them to both see and hear their callers when they were feeling out of touch. In particular, participants worried about being ill or falling and unable to summon help and could see how a monitoring system would be reassuring. Nevertheless, they were adamant that meeting challenges is an essential contributor to retaining independence. The following comment is representative of this attitude:

> I think sometimes we depend on gadgets too much and our minds get lazy. Stay independent as long as possible. Do for yourself as long as you can. Depend on your own abilities as long as you can to keep yourself sharp.

Concomitant with generally open attitudes, five primary concerns emerged: (1) access and reliability; (2) expense; (3) privacy; (4) usability; and (5) caregiver burden.

Access and Reliability

A unique dichotomy of rural living was expressed by many of the participants. Rural residents enjoy a strong sense of community and mutual interdependence while simultaneously recognizing, even celebrating, the necessity of independence. Power failure was cited as a primary example, and only a few participants reported having a generator or other power back-up.

> Well, you know, my neighbor checks on me when we're snowed in.....But you gotta do for yourself,

you really do, because you lose power out here, you're sometimes on your own two or three days.

If you're from the city, you just can't imagine how dark it gets out here when all the lights have gone out. You have to be prepared.

Participants expressed the belief that electronic technologies are inherently undependable and cited experiences with system crashes on a computer. They were concerned that reliance on undependable technology would weaken traditional informal care networks, with a net result of leaving them more vulnerable.

A related concern was that technologies that are widely available elsewhere may not be accessed in some rural areas. For example:

If it wasn't for dish TV we would have no television. Can't get a signal on a cell phone at our house, so I don't know how good that [monitoring] technology would do us….We're not adverse to having it but we just adopt the attitude that we need to take care of ourselves.

Another aspect of the reliability theme was more personal.

With the pill dispenser, you gotta trust that the person who fills it knows what they're doing. And it would be so easy to mis-program it.

I think that whoever is doing the monitoring has to be trustworthy.

Cost

A second theme that emerged in the focus group discussion was concern for costs. Although costs of the technologies represented in the vignettes were not provided, participants immediately assumed that they would be prohibitive. Although they acknowledged that the expense of institutional living might be high compared to gerotechnologies, the initial investment was worrisome.

I think if some of these things were approved for insurance it would make a big difference. Or Medicare.

What about the cost of these, installing right in your home? A lot [of us] are on fixed incomes.

Privacy

Privacy concerns were another important theme that emerged from the discussions. Surprisingly, the protection of data gathered by a 24-hour monitoring system was not a huge concern. Many felt that information about their health and finances was already compromised by modern technology. The greatest concern related to modesty. Although the vignette portraying activity monitoring did not have a visual component, participants expected that this would be inevitable.

Well, the monitoring. I mean, I want to have control over who sees me. I don't necessarily, how do I say this, what if I just got out of the shower? With my telephone, I don't pick up the phone. I wait to see who it is or I let it go to the message.

And you know, falls in the bathroom they say is a real common occurrence. Well I don't want to be naked as a jay bird and be on somebody else's television. You'd have people quitting by the droves.

If my dad had this [monitoring] before he died, I think he would have turned the whole shebang off.

Usability

A strongly stated concern related to usability of technologies in general and of these more sophisticated gerotechnologies in particular.

Well, the programming of all these things—as long as it's simple. 'Cause, like I said, I just found out how to use my digital camera. Well, just to even read the instructions….It's got to be simple enough for an older person, not for a child 'cause they can figure it all out, but for somebody in our generation to do, that you can actually do it, I mean.

Oh God, I don't even use my cell phone because it's too complicated.

Well, I had one of those neck hanging things [Life Line]. But I won't wear it. One time I managed to hit it accidentally and the whole neighborhood was there and we couldn't get the damn siren sound to turn off.

In an emergency, you might get confused or you might not be able to push a button.

Caregiver Burden

Several of the participants had recent experience caring for a parent or spouse. They expressed the physical and emotional burden of the responsibility and were concerned about placing similar burdens on their children.

My son called one day after I'd had a fall, but I didn't tell him. I told him I was fine. So truly, you don't always want to share.

When discussing the potential for virtual communication and monitoring, they worried that it could add to the caregiver burden by making the caregiver more accessible.

Yeah, my mother already calls me four or five times a day. Sometimes it's a huge annoyance and that's one reason I monitor my calls. With virtual communications, she would drive me crazy.

On the other hand, the idea that such technology could reduce in-person contact was discussed. Even if the technology could take over some of the check-in contacts needed to assure the care recipient's safety, participants affirmed a belief that frequent personal contact is essential to human well-being.

People would feel less connected. You have to have somebody come in. It's like babies. They have to be touched and picked up and I think everybody has that need.

CONCLUSION AND RECOMMENDATIONS

Results of this study suggest that older women in rural areas are very open to the potential of gerotechnologies to extend their ability to age in place. They emphasized that each case is different, and that needs should drive the decision making. They cautioned that technologies or any other assistive device must neither promote helplessness nor increase caregiver burden. They encouraged designers to consider the unique usability issues of older people, both physical and experiential. These findings are consistent with earlier studies.

A concern unique to the rural women was the high probability of lengthy periods of power outages. Rural women noted a strong sense of independence coupled with a well-developed network of informal community caregiving that could be eroded with mis-placed dependence on technology.

Further studies should focus on additional populations with unique perspectives, needs, and expectations. The perspectives of diverse ethnic and cultural groups should be examined. Deeper understandings of all the issues uncovered in this study should be pursued. In addition, studies to examine the *in situ* use of technologies in residential settings are essential to reveal deeper insights.

ACKNOWLEDGEMENTS

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