

Final Progress Report

Title: *Bringing Communities and Technology Together for Healthy Aging*

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Abstract

Purpose: Develop an information and communication technology (ICT) system to help older adults (65+) age in place. Challenges to aging in place include isolation, loneliness, falling, managing medications, and transportation.

Scope: 1) Develop an ICT that addresses the challenges to aging in place. 2) Conduct a randomized clinical trial in rural, suburban, and urban Wisconsin to determine effectiveness. 3) Disseminate Elder Tree to 20 Wisconsin counties.

Methods: 390 older adults were randomized into usual care or a group with access to Elder Tree for 18 months. **Hypotheses:** Older adults using Elder Tree would experience greater independence and quality of life, have fewer unscheduled clinic and emergency-room visits, hospital and nursing home stays, and have reduced healthcare costs.

Results: Higher users of Elder Tree at pretest, (compared to the control group), had higher quality of life, reduced depression severity, greater social support, and reduced risk of falls. Continued analyses are examining impact on patients with different numbers of chronic conditions. It appears that patients with metabolic syndrome and related conditions (e.g. diabetes) are responding best to Elder Tree. Elder Tree is functioning in 53 Wisconsin counties.

Keywords: Older Adults, Senior Citizens, Falls Prevention Management, Information, Communication Technology

Purpose

Almost 90% of adults over age 65 want to live in their homes as long as possible, often referred to as aging in place. Challenges on aging in place include isolation and loneliness, falling, managing medications, driving and transportation. The overall purpose of this project was to develop a community based integrated information and communication technology (ICT) system called Elder Tree to support older adults who may face key challenges such as those listed above, which ultimately may cause them to need institutional care and, temporarily or permanently, lose their independence. The goal of this project was to conduct a randomized clinical study to see if Elder Tree had an impact on older adults and their family caregivers. We hypothesized that compared to the control group, older adults using Elder Tree would experience greater independence and quality of life. In addition, they would have fewer health care visits compared to the control group, and thus have reduced healthcare costs.

Scope of Work

The scope of the work can be broken down to six main project areas with sub-categories under each main category.

- 1) Asset-Based Community Development (ABCD) Project
 - a) Mobilize the communities in Eagle Country, Waukesha County, and Milwaukee County using the Asset-Based Community Development (ABCD) model to support people who wish to age at home.
 - b) Develop technology tools that identify and process improvements that will support and enhance the ABCD efforts.

2) Driving Project

- a) Develop ride-sharing and trip planning support.
- b) Develop route choice and navigation technology tailored to the needs of older adults.
- c) Develop an attention assist technology that helps drivers in directing their attention to peripheral vehicles and hazards, and helps drivers to prioritize and manage their attention in high-demand situations such as heavy traffic or while making a left-hand turn.

3) Service Provider Dependability Project – became the Caregivers and Depression Project

- a) Develop an information system linked to Elder Tree to provide feedback to everyone involved (older adults, their primary caregivers, and other family members; service providers; and coordinating agencies) about the dependability of arrivals and departures of homecare service providers and a dependability index using information provided by the system.
- b) Adapt and employ the NIATx process improvement methods to improve provider dependability.
- c) Provide ongoing emotional support to caregivers and older adults to improve their quality of life, reduce burden, and increase their ability to safely age in place.

4) Falls Prevention Project

- a) Develop and test the feasibility of an Elder Tree falls prevention module for older adults.
- b) Gather data on the effect of Elder Tree on older adults' rates of falls and falls behavioral risk.

5) Elder Tree Project

- a) Develop a community-based ICT system called Elder Tree (for older adults) to enhance aging in place.
- b) Conduct a randomized clinical trial to test its effect.

6) Dissemination of Elder Tree Statewide

- a) Develop a dissemination model of Elder Tree.
- b) Implement Elder Tree in 20 counties in the state of Wisconsin.

Methods for the RCT

The study was a randomized longitudinal trial conducted by our Active Aging Resource Center (AARC). AARC is a consortium of the university, state, and community partners headquartered at the Center for Health Enhancement Systems Studies (CHESS) at the University of Wisconsin-Madison. Participants in the study – adults age 65 and older and their informal caregivers (spouses, children, or others who provided physical, emotional, and/or financial support for the older adult), were randomized into one of two groups; 1) the control group in which participants use their usual sources of information and communication or 2) the intervention group who were given access to Elder Tree for 18 months. If needed, they were also provided a laptop and Internet access.

Participants were recruited from three regions in Wisconsin: urban Milwaukee County, suburban Waukesha County, and rural Richland, Juneau, and Sauk Counties (known as Eagle Country). In order to qualify for the study, participants had to experienced one or more of the following in the past 12 months: fallen once or more, felt sad or depressed, received home-health services, stayed in a skilled nursing facility, been to the emergency room, or been admitted to the hospital. Exclusion criteria included inability to get into or out of a bed or a chair without assistance, being homeless, having hospice care or living at a hospice center, living in an assisted living facility without access to a stove, living in a nursing home, being cognitively impaired (as determined by the recruiter's observation - for example, inability to answer questions or track the conversation), unable to give informed consent, or being unable to use Elder Tree (for example, poor vision that prevents reading a computer screen).

Upon eligibility and consent, participants completed a baseline survey and were sent follow-up surveys 6, 12, and 18 months later. The primary outcome was quality of life of the older adult which was measured by the Patient-Reported Outcomes Measurement Information System (PROMIS) Global Health Scale. In addition, we hypothesized that older adults using Elder Tree would have fewer unscheduled clinic and emergency-room visits and hospital and nursing-care stays compared to the control group.

Results

Asset-Based Community Development Project

Our objective was to mobilize the communities in Milwaukee and Waukesha Counties and in Eagle Country using the Asset-Based Community Development process to support people who wished to age at home. With grant funding, we hired a county coordinator in each of our three areas who worked out of the local Aging and Disability Resource Centers and acted as liaisons between the research team at the University of Wisconsin-Madison and the communities. Each county coordinator established a community-based strategy team and/or advisory board. These teams included leaders in the community such as the local pharmacist, ministers, police chief, mayor, service providers who work directly with the elderly, as well as older adults and their caregivers. The strategy team provided entry points into the community, gave critical insight and feedback throughout the course of the project, making sure we were staying true to the needs our customer as we developed the technology to help older adults age in place. Ultimately the community-based strategy teams were critical to spreading and sustaining Elder Tree in each of the counties and throughout the state.

Through our ABCD work, more than 300 participants completed the inventory of community assets. After reviewing the inventory, each county determined the areas they wanted to focus on that would support older adults in their communities. More than 150 people were interviewed in Eagle Country. Their focus was to reduce social isolation among older adults and increase interdependence. An example of a result of the work in Eagle Country was that the Richland Middle School held a technology expo for older adults to help them become more comfortable with technology. This tech expo was extremely well received and has turned into an annual event, helping to bring the generations together.

The Milwaukee County strategy team was particularly interested in highlighting the wealth of resources available to senior citizens. They felt that this was particularly important because the county was often thought to hold fewer opportunities for seniors than the surrounding more affluent suburbs. More than 60 older adults in Milwaukee County agreed to be interviewed by the ABCD team. As a result of the interviews, the Milwaukee strategy team determined that the primary focus of the work in their county should be to increase social connectedness of older adults. Additionally, they felt it was important to put an emphasis on connecting seniors with young people in a positive way. This concern stemmed from a sense that seniors often felt anxious about interactions with youth in their communities.

The Waukesha County strategy team designed an interview guide to assess resources for seniors. More than 100 older adults were interviewed. Like the other counties, Waukesha also found that increasing social connectedness of older adults was the most important goal. These findings along with others gathered simultaneously by the specific project work groups within the project, were the foundation for the development of our ICT called Elder Tree. Allowing older adults to easily communicate with each other through the Elder Tree site, as well as share information on events in their communities was our highest priority. The emphasis on social connectedness as seen through the Elder Tree discussion boards as well as the development of community calendars and listing of local resources, were a direct result of the interviews that were conducted.

The connections formed in Eagle Country, Waukesha, and Milwaukee counties with both formal and informal organizations and programs were critical as we transitioned from the ABCD project to recruiting participants for the Elder Tree randomized clinical trial and later to state wide dissemination. Each county coordinator hosted a Community Celebration at the end of the ABCD work where they reported out on the assets inventory and introduced Elder Tree. These celebrations were well attended and older adult from the counties could sign up for the randomized clinical trial. These celebrations helped to jumpstart our recruitment.

Once recruitment was well on its way the ABCD team began to assist in statewide dissemination of Elder Tree. The ABCD team convened the New Berlin Connects group – a group of senior citizens in Waukesha County-- along with representatives of church organizations, the New Berlin school district, Waukesha County Technical College, the New Berlin Public Library, and The Regency, a senior housing facility in New Berlin. The goal of the New Berlin Connects group was to develop and test dissemination strategies to take Elder Tree statewide.

Driving Project

The initial goal of the driving project was to understand the independence and mobility needs of older adults. In phase one, the driving project team conducted focus groups consisting of 10 to 12 older drivers (age 65 or older) in Richland, Waukesha, and Milwaukee Counties to assess how rural, suburban, and urban older drivers maintain their independence and mobility through driving. From these interviews and focus groups the driving team identified 3 major themes: 1) driving safety and concerns, 2) route choice and navigation, and 3) ride sharing and trip planning.

These themes were used to develop phase 2 of the work, instrumenting the driver's vehicle and conducting a contextual design study. Thirty-nine older adults were recruited from Richland and Milwaukee Counties to take part in a small study where a 2 way facing camera, audio device, and an on-board diagnostic (OBD2) device was mounted in their vehicle. Results from this study showed that older adults tend to plan their trips in advance using a number of different resources such as Google maps, printed county maps, the newspaper, calling the sheriff's office, television and radio. Planning a trip involved gathering information about challenging driving situations such as knowing current traffic and weather conditions, distance and time to get to a destination, and avoiding construction zones, traffic incidents, etc. From this information the initial design of a Trip Planning Tool was developed. The Trip Planning Tool provided older adults with two options: fastest route and the route with fewest driving challenges (routes with the fewest traffic incidents, construction zones, detours, etc.). We tested the Trip Planning Tool against Google Maps and found that our Trip Planning routes had 3.76 fewer driving challenges on average than Google Maps. Reducing the driving challenges meant that the trips were safer, however on average the Elder Tree Trip Planner routes were slightly longer (1.8 minutes and 0.7 miles).

Phase three of the driving project study included developing a Trip Diary Tool to provide older adults feedback about the trips they take, once again using a Wifi enabled OBD2 device in their vehicles. The trip diary page provided feedback about risky driving behaviors (such as harsh acceleration, speeding, harsh cornering or braking, driving without a seatbelt, or driving with an engine light on) as well as route choice (routes with fewer left turns or U-turns). Participants were sent reports that reviewed their trip history and highlighted any risky driving behaviors that were detected. Additionally, recommendations were given to reduce their risks. This allowed the driving team to better understand the risks older adults faced regularly and resulted in the development of a Driving Tips blog which was integrated into Elder Tree. The blog allowed members of the driving team to post videos (such as how to navigate a round-about) and create tips (such as driving in rain) to help older drivers. Study participants could add additional information on road closures or write about their experiences as a way of sharing their knowledge as well.

Service Provider Dependability / Caregivers and Depression Project

The service provider dependability team interviewed older adults in their home as well as several service provider organizations to determine the key concerns older adults and their family caregivers had about outside services provided to older adults in their homes. The major themes that emerged were trust, privacy and respect, accountability, communication and coordination, responsiveness, delivery timeliness, ease and convenience of scheduling, and giving provider feedback without fear. While our initial goal was to develop an information system linked to Elder Tree that would provide information to everyone involved (older adults, their primary caregivers, and other family members; service providers; and coordinating agencies) about the dependability of individual providers and developing a provider dependability index, it quickly became apparent that, due to the number and variety of services used by older adults and their families, and the wide variation in use of technology for scheduling and evaluating service performance, expecting large service organizations and "mom and pop"

services to use a standardized system was impractical to implement and unrealistic that they could adhere to it.

We transitioned our scope of work away from the service providers and focused on the older adults and their family caregivers and began developing Caregiver tools. Through interviewing older adults and family members it became clear that addressing caregiver depression is both critical to the welfare of the older adult and the caregiver and key to helping them remain at home. In addition, review of the preliminary baseline survey data of the subsample of participants recruited through April 2014, revealed that 18% of caregivers on study had depression. As a result, several services were developed and prototyped to directly and indirectly address depression. We incorporated the PHQ-9, a standard depression measure, into Elder Tree along with a battery of responses and suggested strategies that are automatically sent to the participant that corresponds to the severity of depression. An Elder Tree participant shared the following:

“The holiday season is sad sometimes because of the death of two of my children and a great granddaughter. I take the depression assessment often in the winter to keep up on what I am feeling. It is a valuable tool and helps me to know when to consult dr.”

In addition, several other tools were included in Elder Tree: 1) Caregiving Information and Tips section which provided general information on caregiving, respite, grief and loss; 2) a discussion group for caregivers called Caregiver Support which was monitored by a clinical health psychologist who posted articles relevant to caregiving; 3) a Caregiver Coach, allowing participants to post questions to an expert and receive a private response; and 4) a Social Games section in which Elder Tree staff started 3 to 4 new games per month with the purpose of capitalizing on opportunities that allow Elder Tree participants to reminisce and get to know one another better, ultimately providing support as well as a diversion from caregiving. These services were well received and integrated into the Elder Tree system.

Falls Prevention

The Falls Prevention team started by completing focus groups of participants of the Stepping On Program in Madison, WI. Stepping On is a well-researched 7 week falls prevention program led by a health professional and a lay leader. Participants of the Stepping On Program benefitted greatly from the interactions provided during the face-to-face program, however interviews with class participants indicated that they quickly stopped doing the exercises they learned once the classes ended. They also expressed sadness at losing the social interaction resulting from the class meetings. This feedback led us to develop a website that Stepping On graduates could use. We called it Keep On Stepping On (KOSO). KOSO included a discussion group specifically around falls prevention, an information section where a *Falls Prevention Coach* regularly adds tips and strategies on falls prevention, a video library of exercises to help improve balance and strength, as well as general information about reducing falls risk in your home. All of the KOSO features were integrated into the Elder Tree website. During the Elder Tree clinical trial, those randomized to Elder Tree were sent a personalized private message from the Falls Prevention Coach in which they were encouraged to take a Falls Risk Assessment. Approximately 95% of the participants completed the Falls Risk

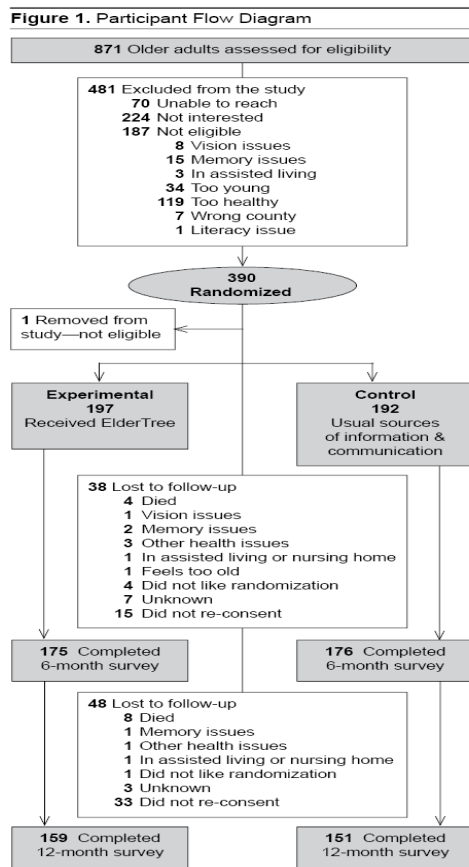
Assessment. All participants got feedback from the Assessment and any participant who was “at risk” for falls was sent a recommendation to discuss their risk assessment results with their doctor, were invited to take part in the Falls Prevention Discussion Group, and received falls prevention tips on a semi-regular basis when they logged onto Elder Tree.

The Falls Prevention Coach answered numerous questions on an array of topics such as walking safely on ice, appropriate strengthening exercises prior to knee replacement surgery, proper use of a walker, how to determine appropriate height of walking sticks or a cane, how to get in and out of a chair, etc. There were over 400 private message exchanges between the Falls Prevention Coach and study participants. Elder Tree participants seemed to particularly enjoy an interactive learning feature where participants identified falls risks in various photographs.

Elder Tree Randomized Control Study

Recruitment for the randomized clinical trial began in November 2013. Our original goal was to recruit 300 older adults from three geographically diverse counties; Milwaukee (urban), Waukesha (suburban), and rural (Eagle Country). We completed recruitment at the end of May 2015 with a total of 390 older adults who had consented and completed our baseline survey. Participants were randomized to one of two arms – the control group or the experimental group who were given access to the Elder Tree website (see Figure 1 Participant flow diagram).

Figure 1. Participant Flow Diagram



The baseline demographics of our study participants were:

- Age range: 65 to 100 years old. Mean age: 76.6 years old.
- Gender: 74.9% female, 25.1% male.
- Education Level: 7.2% did not complete high school, 67.2% graduated from high school, 25.6% completed a 4-year college degree. '
- Living situation: 63.4% lived alone.
- Computer experience: 19.5% had never used a computer before and 17.2% ' indicated that they were somewhat or very uncomfortable using a computer. '
- Transportation: 26.7% do not drive.
 - 19 distinct drivers reported automobile accidents in the past 6 months.
 - 33 distinct drivers reported near misses.
- Falls: 143 distinct people reported falling a total of 293 times in the past 6 months.

Use of Elder Tree:

The public discussion groups were the most heavily used parts of Elder Tree. This is consistent in what we have found in all of our previous clinical trials of systems we have designed. A total of 18,983 messages and comments were posted in the public discussion groups by study participants. In addition, study participants sent 16,930 private messages to one another. The most popular discussion group was "Just Chatting" with 11,909 posts, followed by Social Games (2,712 posts), Religion and Spirituality (1,638 posts), Politics (1,427 posts), Health and Wellness (570 posts), Caregiver Support (232 posts), Elder Tree Help/Support (166 posts), and Preventing a Fall (141 posts). There were also public discussion groups for each County but there was minimal use of these groups.

Private Messages (sent between study participants) was used heavily and much higher than we have seen in any of our previous studies. There were 16,930 posts between study participants. In addition, there were a total of 420 private messages sent from the Falls Prevent Coach to study participants, 163 private messages from the Caregiver Coach to study participants, 39 from the Driving Coach, and 21 from the Diabetes Diet Coach.

Randomized Trial

Randomization. The project statistician used a computer-generated allocation sequence to randomize eligible older adults (or older adult/caregiver dyads) to the intervention (Elder Tree) or control. Randomization was stratified by geographic region (urban, rural, and suburban), whether a participant had his or her own computer, and living status (alone or with others), using random blocks of 4 and 6. Randomization was implemented by the project director using sequentially numbered, sealed, opaque envelopes. The sequence was thus unknown to the research team members who enrolled participants.

Intervention. Elder Tree evolved from other ICTs developed at the Center for Health Enhancement Systems Studies for a variety of illnesses (e.g., asthma, breast and lung cancer, addiction, and so on) and subjected to numerous randomized trials. The process of designing Elder Tree and details about the services in the website have been

previously published. This process resulted in a simple interface providing access to 14 different services, such as Personal places which contained a to-do list and health tracker; Conversations with a public discussion board (open to ET members) and private messages (where members could send private messages to one another within ET); and Information with local resources, a bulletin board for posting announcements and events sorted by county, games, trip mapping, and active living tips about such topics as falls prevention, medication management, and safe driving.

Elder Tree is consistent with self-determination theory, which posits that meeting 3 psychological needs contributes to an individual's functioning: feeling internally motivated rather than coerced in one's actions, experiencing competence, and feeling related to others. According to this theory, supporting patients' needs for autonomy, competence, and relatedness will improve QOL.

Outcome Measures. Assessments were collected at baseline, 6, 12, and 18 months, and involved measures with an easy reading level, where possible. After completing the surveys, participants returned them via US mail to the Center. The primary outcome, older adult quality of life, was measured using the Patient-Reported Outcomes Measurement Information System (PROMIS) Global Health scale, a 10-item subjective measure of general health. It includes a 4-item global physical health scale (Cronbach's $\alpha = 0.81$), and a 4-item global mental health scale (Cronbach's $\alpha = 0.86$). PROMIS scales were developed using item response theory and capture a greater range of the trait being measured, with greater precision, than other instruments.

Based on the clinical expertise of our team, we additionally developed a list of 18 medical issues common amongst older adults with chronic health concerns (e.g., bruising, fainting, abdominal pain etc.). The number of symptoms was treated as a continuous outcome.

Social support was measured with 22 items, assessing both perception of providing and receiving support (1 = never, 5 = most of times), e.g., How often is there someone who can count on you to listen when they need to talk? How often is there someone you can count on to listen to you when you need to talk ($\alpha = .95$)?

After dropping an item on suicidal ideation from the Patient Health Questionnaire (PHQ), we measured depression with 8 items (4-point scale ranging from 0 = not at all, 1 = several days, 2 = more than half the days, and 3 = nearly every day): e.g., little interest or pleasure in doing things ($\alpha = .88$ ¹).

Fall prevention was measured with the modified Falls Behavioral Scale for the Older Person, with 15 items (4-point scale ranging from 0 = never, 1 = sometimes, 2 = often, and 3 = always) e.g., I talk with others about things I do that might help prevent a fall ($\alpha = .72$ ²).

Sample Size Calculation and Statistical Analysis. We originally targeted a sample size of 300 (150 per group) after dropouts in order to provide power to detect a modest effect

¹ The reliability for PHQ8 is calculated with questions at baseline. The reliability for PHQ8 at twelve month, $\alpha = .88$.

² The reliability for fall risk is calculated with questions at baseline. The reliability for fall risk at twelve month, $\alpha = .72$.

size of Cohen's $d = .35$ with an 80% response rate, based on response rates in studies of other ICTs we have developed. We enlarged the target sample to detect a greater range of incremental effects on discrete outcomes.

We planned to evaluate the effects of Elder Tree by comparing intervention and control participants at 6-, 12-, and 18-month assessments. We used mixed-effects models to evaluate the primary and secondary hypotheses, where pretest score functioned as a covariate, treatment condition was a between-subjects factor, and the multivariate outcome reflected scores for a given assessment across the time points. Separate analyses were conducted for each outcome.

Results

Main effects. Data from the 6- and 12-month surveys were analyzed. (Because of loss of participants at 18 months, these survey data were not analyzed.) No significant effects were found for any of the hypothesized outcomes at 6 or 12 months.

Secondary Analyses. We examined whether Elder Tree had effects for some patients and, if so, which ones. We examined whether the effects of ElderTree were moderated according to older adults' levels of three types of healthcare service utilization in the 6 months prior to the baseline survey: (1) primary care visits, (2) ER and urgent care visits, and (3) overnight stays in the hospital or a long-term care facility. We found that, as participants' utilization of primary care services increased, ET had a greater effect in improving quality of life, reducing depression, reducing falls risk, and increasing social support. We did not find that participants' utilization of ER and urgent care moderated the effects of ElderTree. We found that, as participants' overnight stays in hospitals and long-term care increased, ET had a greater effect in reducing falls risk.

Together, these preliminary findings suggest that a system such as Elder Tree could potentially improve outcomes and reduce the cost of primary care for the subset of patients that account for 95% of Medicare spending.

Analyses continue to assess impact of ET on health services utilization when moderated by combinations of multiple chronic conditions. Preliminary analyses suggested that patients with metabolic syndrome and related conditions (such as diabetes and depression) found that ET produced significant reductions in primary healthcare use and symptom distress. But those analyses continue.

Dissemination

The aim of the Dissemination Project was to develop a dissemination model for Elder Tree, pilot the model and then disseminate Elder Tree to 20 counties in Wisconsin. We began by enlisting a group of volunteers to help develop our dissemination model. The group called themselves New Berlin Connects (or NBC) and were involved with the Elder Tree project since it began in 2011. The NBC team was made up of older adult residents of New Berlin, Wisconsin, as well as representatives from the local public library; Aging and Disability Resource Center; churches, school district, and senior living communities. Through meetings, interviews, work sessions, and testing various dissemination strategies within the New Berlin community, the NBC team helped create the Elder Tree pilot dissemination model.

The model contains two levels of dissemination:

Level 1: Develop Community Users. The focus in Level 1 is to find existing groups of older adults and get them using and benefiting from Elder Tree. The ability to quickly establish a base of older adults using Elder Tree technology in a community is key to garnering wider engagement and support from the community.

Level 2: Develop Community Ownership. The focus of Level 2 was to find and engage community partners (senior centers; social service agencies; etc.) who see the Elder Tree technology as a resource to add to their support toolkit for the older adults they serve. We found that adding Elder Tree as a resource tool they recommended to older adults was an important step but an equally important step was to have a staff member or volunteer take on the role of a “community administrator.” The community administrator enrolled older adults in Elder Tree and provided support and encouragement as they were able. In many ways, the community administrator acted as the “champion” within their community, making it easy for older adults to access and join Elder Tree, and spreading the word about Elder Tree by sharing success stories of older adult benefitting from it.

We tested and refined our dissemination model and in June of 2016 we began to roll out across the state of Wisconsin.

To date there are 565 members using Elder Tree from 57 counties throughout Wisconsin. This far surpassed our original goal of 20 counties as stated in the grant. In addition, 60 people have been approved and taken on the role as Community Administrators.

Dissemination of the Elder Tree system continues to grow. A positive trend in dissemination is that seniors, community administrators, and aging professionals are making Elder Tree (ET) a permanent resource in their *senior support toolkit* and are spreading the word about ET in their communities. When we started dissemination, the majority of new members said they learned of ET from a presentation by the ET dissemination coordinator. The majority now say they hear about ET from a friend, a local publication or a presentation by someone in the community. There has also been a steady increase of interest in ET from aging professionals who manage services and coordinate programming for seniors. Examples include: 1) Senior Centers – have used Elder Tree as a platform for technology training in senior computer labs and social support for members. 2) Caregiver Coalitions – have provided Elder Tree as resource for caregivers who desire to connect socially with peers, but find it difficult to leave home and their care receiver. 3) Senior Living Facilities – have shared Elder Tree with residents who struggle with loneliness, even in a senior community environment. 4) Senior Health & Wellness Fairs – have become increasingly popular. They seem to be a very good way to reach rural seniors. Many new members have come from presentations and informational booths at these fairs throughout the state. 5) Aging Professionals – continue to promote and look for creative ways to use ET to engage their senior clients. *Ethnic Elders* in Kenosha is a group of 30+ seniors from the minority

community who are promoting ET through their monthly breakfast meetings. United Way/RSVP of Marathon County are using ET as a resource for their senior computer training classes which draws over 500 seniors per year. 6) Healthcare Professionals – have promoted ET to patients. Ministry Health in Door County added ET to their standard senior outreach initiatives. Marshfield Clinic, a large healthcare provider in northern Wisconsin, sponsored a radio and local television broadcast to promote ET. Marshfield's director of tele-medicine promoted it among senior patients.

As dissemination of Elder Tree throughout the state of Wisconsin has expanded, we have also had inquiries from several organizations outside the state of Wisconsin interested in implementing Elder Tree with the older adult they serve. These include Little Brother – friends of the Elderly in San Francisco, California, Sweetser Behavioral Healthcare in Saco, Maine, and the Medical University of South Carolina, in Charleston. We have also been contacted by individual older adults in Illinois, Iowa, Minnesota, Michigan, Maryland, and California who heard about Elder Tree and wanted to join the site. Lastly, many of our Wisconsin Elder Tree members have specifically asked us to open Elder Tree to other states, so they can invite and connect with friends and other seniors who live throughout the United States as well as abroad.

While we are extremely pleased with the success of our dissemination plan, we believe it is best summed up by a few quotes from our Elder Tree members.

"I appreciate this program. It's a whole new world and a new community. It & makes a big difference when you live alone and out in the country. To read & and write messages is really nice because sometimes it is days before & talking to a real person. Thank you Elder Tree." &

"I am so much more grateful than words can show to the wonderful crew for putting this all together for us to enjoy, learn more about the world around us and the health reminders to keep us happier than before we tried Elder Tree." &

"What I like most about Elder Tree is the people! We are all so different but & also we are all so alike. I enjoy learning from others & getting ideas. If I have & a question there is someone who has the answer. It's just a treasure & a & pleasure to be on Elder Tree!!" &

Conclusion

We believe the results of this research are quite significant. We have developed a technology that seems to have a positive effect on older adults who are heavy users of health services. In particular, Elder Tree reduced falls risk and depression, and improved quality of life and social support. Preliminary analyses suggest that older adults with multiple chronic conditions related to metabolic syndrome benefit in terms of reductions in symptom distress and less use of primary care services. However, these analyses continue and papers have been drafted.

We are also excited because the system has been well received by older adults, and an infrastructure for continued dissemination has been established in 53 of Wisconsin's 72 counties. Continuation of the dissemination relies on acquisition of funds to do so. We have secured a follow-up grant from the NHLBI, but we continue to seek support for continued operation of Elder Tree Wisconsin, the dissemination model currently in place. Finally, the study has extended research on mechanisms to improve safe driving (sensors and software).

Key Words

Older Adults, Senior Citizens, Falls Prevention Management, Information and Communication Technology (ICT)

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