Intergenerational Technology Transfer: Enhancing African American Older Adults' Self-Efficacy for Diabetes Self-Management

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Community Policy Brief

What is the Purpose of this Study?

- The purpose of the study is to design a health and technology education session, then conduct it with African American older adults with diabetes and African American younger adults connected to them via familial or community networks

What is the Problem?

- African American older adults are twice as likely to have diabetes and related complications than White older adults
- African Americans are also more likely to have low health literacy, which is associated with barriers to using technology to support recommendations for chronic disease self-management
- Despite research describing the effectiveness of self-management programs designed to enhance self-efficacy, little is understood of African American older adults' self-efficacy in using technology to support recommended chronic disease self-management

What are the Findings?

- After designing and conducting the health and technology education session, both older and younger adults showed significant improvements in self-efficacy for following recommendations for diet and physical activity, and for use of technology designed to support self-management
- For both older and younger adults, participants showed less apprehension concerning privacy, which is a known barrier to technology use

Who Should Care Most?

- Both patients and their support networks, along with clinicians and diabetes educators should consider pairing older adults and younger adults for health and technology education sessions

Recommendations for Action

- Consider partnering with community-based organizations to confirm the content and design of health and technology education sessions
- Conducting health and technology education sessions with older adults with diabetes and younger adults connected to them via familial and social networks can result in increased use of technology to support chronic disease self-management

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Abstract

Background

African American older adults are twice as likely to have diabetes and related complications than White older adults. Despite research describing the effectiveness of self-management programs designed to enhance self-efficacy, little is understood of African American older adults' self-efficacy in using technology to support recommended chronic disease self-management.

Objectives

Our objective was to describe the feasibility of using a community-based health education session that included the potential for intergenerational technology transfer to promote use of technology to support self-management. The study team included key staff from the YOUR Center based in Flint, Michigan. The research-community team first designed a health and technology education session then measured its impact on African American older adults' self-efficacy for using technology to support diabetes self-management.

Methods

The Community-based participatory research (CBPR) approach informed the study design. The design incorporates both qualitative and quantitative methods which were duplicated at the two study sites, in Detroit and Flint, Michigan. We used a purposeful sample of older adult and younger African Americans drawn from each study site. We conducted an interactive, community-based diabetes health education seminar in which African American older adults with diabetes shared insights on living with diabetes with younger adults they selected from their personal or familial networks. In the sessions, the younger adults showed older adults how to access health information on smartphones. We conducted four sessions in Flint and Detroit, Michigan.

Results

The study sample included African American older adults (aged 50+) (N=39) and younger adults (aged 18-49) (N=26). Both the older and younger adults showed statistically significant improvements in self-efficacy for following recommendations for diet (i.e., more confident in preparing healthy meals and snacks at home ($p = 0.0179$) and following an ideal diet ($p = 0.0044$)) and physical activity (i.e., reduction in perceived amount of effort required to perform regular exercise ($p = 0.0185$)), and for six of the seven items which measured confidence in using technology to support self-management (e.g., use of technology designed to help with health ($p = 0.0002$)). Interestingly for both groups, participants showed less apprehension concerning privacy, shown to be a barrier to use.

Conclusions

This novel study elucidates an approach to address barriers to technology designed to support chronic disease self-management. Findings also provide foundational observations to inform further development of theory and evidence-based healthy aging interventions that use technology to support self-management for populations who experience barriers to technology use. Future research should explore

the efficacy of community-based health education sessions with intergenerational technology transfer designed to support self-management.

Keywords: health disparities, health inequity, aging, technology self-efficacy, African American

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Introduction

One-third of all older adults (age 65 or older) have type 2 diabetes ("diabetes"). When compared to White older adults, older adult African Americans are twice as likely to have diabetes and diabetes-related blindness and amputations.[1] African Americans are also more likely to have low health literacy, and which is associated with the efficacy of diabetes self-management and support interventions.[2] Health literacy disparities are also associated with age, as two-thirds of all older adults have difficulty interpreting health information.[3-5] Health literacy is directly associated with technology use for accessing health information. For example, individuals with low health literacy are less likely to use a search engine and/or download a smartphone application ("app").[6] Rapid advancements both in consumer technology (i.e., smartphones, applications) and communications (i.e., broadband) have resulted in the availability of various technology designed to support chronic disease self-management,[7] yet beyond decreased use when compared to Whites, little is known of African American older adults' use of technology to support diabetes self-management.

Self-management accounts for approximately 70 – 80% of recommended chronic disease management; individuals who can consistently follow recommended self-management behaviors show improved health outcomes.[2] Specific self-management recommendations help lower risk of diabetes-related morbidity and mortality (i.e., physical activity, medication behavior, diet, attendance at follow-up appointments). Self-management programs for various chronic diseases have been shown to improve self-efficacy and adherence to recommended self-care.[2,8] Diabetes self-management program effectiveness is enhanced through the use of technology, primarily by facilitating improvement in health literacy.[3] By contrast, low health literacy is associated with low diabetes self-management program effectiveness.[8] Chronic disease patients may use assorted information and communication technologies (ICTs) to help them understand and follow recommended self-management health behavior. Technology-enabled activities to support diabetes self-management may include seeking and interpreting online health information. The vast and growing availability of health information requires that individuals have the skills to access and evaluate the myriad of dynamic information sources and tools (e.g., phone apps). Race and age are factors in the use of technology designed to support chronic disease self-management; specifically, African American older adults experience barriers to access technology designed to support diabetes self-management.[1,3] For example, older adults who are physically or economically disadvantaged are less likely to have broadband Internet access.[7] Broadband access is important because it positively predicts the use of social networking sites (SNS), and SNS use complements or compensates for existing social networks.[9] Older African Americans are less likely than older Whites to use technology to help them manage their health. They are less likely to search the web for information and use websites to support chronic disease self-management.[10] Also, African Americans of lower socioeconomic status are less likely to have access to or familiarity with technology (e.g., computers, tablets, smartphones).[11]

Across various studies examining technology use, older adults indicate that technology helps them connect to the outside world, and various ICTs have been shown to enhance social relationships through increased communications.[12] This is particularly important for older adults who more frequently experience social isolation. Social relationships, which include fictive kinships, are important factors in supporting older adults' psychological and physiological well-being.[13] Members of social or familial relationships can support older adults in following of recommended chronic-disease self-management behavior.[14]

Intergenerational technology transfer, the sharing of information and skills across generations, offers the potential to increase learning for both older and younger adults, particularly those connected through family or social ties.[12] Hence this approach creates learning opportunities for both age groups. Leading practices for these activities include an emphasis on learning new skills, rather than on differences in age or technology competencies.[12] Successful technology-oriented intergenerational skills transfer applies a dynamic in which younger adults support older adults to navigate – or simply enter into – a digital world. Older adults can contribute to the intergenerational exchange in the context of non-technology oriented goals such as conveying their experience living with chronic conditions and offering strategies for health and wellness appropriate for the cultural environments they share with younger adults. Even when the primary intergenerational engagement dynamic is younger adults guiding older adults in technology skill development, new modes of communication may develop as older adults become more knowledgeable and comfortable sharing their inquiries about technology. According to Ghosh et al. (2014), older adults can become "empowered 'prosumers,' both a consumer and producer, of information in the digital world" (p. 11).[15] Over time, the intergenerational communication dynamic can result in increased skills and ICT use.

Although factors driving general technology use among older adults continue to be investigated, there is limited literature describing technology skills and self-efficacy for older adults with chronic illnesses.[3-5,16] Current research has not elucidated what specific technology features are effective at supporting older adults' health behavior consistent with recommended self-management.[17] In limited study populations, patients with low health literacy have benefited from diabetes self-management education; however, there are considerable gaps in the literature regarding the use and efficacy of online educational materials for African American chronic disease patients, who, experience barriers to technology use and are more likely to have low health literacy.[18] Addressing these gaps is important given persistent diabetes disparities and the proliferation of various technology designed to support recommended diabetes self-management. To address these gaps we designed a study guided by the following research question: How does participation in a health education and technology information session impact African American older adults' self-efficacy for using technology to help them follow recommended chronic disease self-management behavior?

In this paper, we describe the impact of an interactive, community-based health education session created to promote self-efficacy of technology designed to support recommended diabetes self-management (e.g., accessed via smartphone). The community-based health education sessions brought together African American older adults with diabetes with African American younger adults they selected who were connected to the older adults via family or social networks. Community-based health promotion efforts can help provide access to health information for hard to reach populations that experience persistent disparities.[19,20] The conceptual basis for the study design is the socio-ecological model of health, specifically two fundamental concepts, 1) multiple factors influence health behavior (e.g., individual, community) and 2) health behavior is influenced by, and influences, the individual's social environment.[21] We describe the impact of the diabetes education session that included a technology component in which younger adults helped the older adults improve their technical skills, specifically for technology designed to support diabetes self-management. In this paper, we establish the groundwork for refining intergenerational knowledge transfer for older adults living with chronic conditions by describing the results of technology use for self-management support.

Methods

We used a purposeful sample of older adult (aged 50+) (N=39) and younger African Americans (aged 18-49) (N=26), drawn from the two study sites, one in Flint and the other in Detroit. (please see Table 1) Our purposive sampling approach included these two urban centers because underserved, urban areas are particularly impacted by chronic disease health disparities, notably diabetes.[22] There was no control group and study procedures were duplicated at each of the two sites.

The older adult participants were African Americans who self-reported diabetes diagnosis. The older adults selected the younger adults from their personal or familial networks, so the younger adults were connected to the older adults through these relationships. There is no common age to demarcate "older adults" in the literature. For United States-based studies that use publicly available datasets (i.e., National Health and Aging Trends Study - NHATS), 65 is a common age used to demarcate older adults,[23,24] but 50 is a common age for studies examining older adults' use of technology using primary data, in the United States and around the world.[25] Therefore, participants who identified themselves as 50 years of age or older were classified as older adults, and individuals under 50 years of age were classified as younger adults. The BLINDED University Institutional Review Board (IRB) approved this study protocol on July 4, 2016 (IRB #: 16-793). Participants were recruited through relationships with various community members in the two urban centers. These relationships were established and nurtured through an established academic-community partnership between the study team and the FBO which has a history of health promotion activities in both sites. Participants were compensated $40 for their time and effort.

The goal of the health education session was to promote intergenerational technology transfer between older adults with diabetes and younger adults connected to them.[26] The sessions featured older adult-younger adult pairs that selected smartphones, and encouraged each other to use them for a specific task (e.g., downloading a health app focused on nutrition, medications, exercise, etc.). We conducted two health education sessions at each of the two study sites. Given the role of the community partner throughout the study, we assume that the established research-community partnership enhanced the feasibility of the study.

To measure the effect of the educational sessions, we used a 12 item instrument that addressed three major themes according to the research question: 1) exercise, 2) dietary behavior, and 3) use of technology designed to support diabetes self-management. (please see Table 2) In addition to collecting demographic information, the 12-item instrument solicited self-efficacy levels from 10 of the 12 items using a 5-

point Likert scale (5- strongly agree, 4 – agree, 3 – undecided, 2 – disagree, 1 – strongly disagree). Responses to two of the 12 items were not appropriate for the Likert scale (i.e., EXER1 and EXER2). The instrument was designed using validated assessment scales to measure health literacy and self-efficacy for using technology designed to support diabetes self-management.[29-32] We varied question design so that "strongly agree" does not link to the same attitude. For example, we ask for the perceived effort to exercise (EXER2) in which a "strongly agree" response indicates *low* self-efficacy. We compared responses in the pre-session and post-session questionnaires to test the impact of the seminar on enhancing diabetes self-management skills. The distribution of the data was tested for normality first, and based on the test result a non-parametric test (Kruskal-Wallis) was used to compare the responses. The comparison test was performed for the older adults and younger adults groups individually, as well as for the entire sample.

Results

We conducted the health education sessions in the two study sites in May, 2017. All 65 participants attended the two sessions. Participant demographics are provided in Table 1. Overall, the average age of the 65 participants was 49 years (M = 49.31, SD = 16.72). Among the participants, 39 (60%) were above 50 years, and classified as older adults. The distribution of age (in years) among the participants was found to be not normal (p = 0.001***) from Shapiro-Wilk's method. The older adult participants were between 52 years and 82 years old. The average age of the group was 61 years (M = 61.46; SD = 6.83). Using the same normality test, the age distribution of older adult participants was found to be not normal (p = 0.008**). In comparison, the 26 younger adult participants had an average age of 31 years (SD = 8.46). The youngest participant from this group was 19 years old, and the eldest one's age was reported as 48. Using the same normality test, the distribution of age among these 26 participants was found to be normal (p = 0.314).

The same set of items were part of pre and post-session questionnaires, and the items are provided in Table 2. The first two items concerning exercise behaviors had options from 1 to 7 (i.e, how many days can you walk more than 20 minutes – EXER1 and how many days per week can you engage in vigorous activity – EXER2), while for the rest of the questions participants responded using a 5-point Likert scale (5- strongly agree, 4 – agree, 3 – undecided, 2 – disagree, 1 – strongly disagree). Wilcoxon signed rank sum test was performed to compare participants' responses between pre-session and post-session questionnaires for the older adults and younger adults groups individually and for the entire sample.

The test results for the entire sample overall suggest a significant improvement in various aspects of participants' self-management skills such as adherence to recommended dietary behavior, and use of technology (please see Table 3), while for fostering pro-exercise behavior, the improvement was marginal. The entire sample showed increased confidence in exercising. For example, a significant decline (p = 0.0185*) was observed in response to the perceived amount of effort required to perform regular exercises (EXER3), indicating an increase in self-efficacy to perform physical activities. Similarly, there was an increase in the number of times participants indicated that they could engage in walking more than 20 minutes at a time (EXER1), and vigorous physical exercise (such as running, swimming, playing tennis, etc.) per week (EXER2) in the post-session. However, the increase was not significant (please see Table 3).

For dietary behavior, the result indicates that participants were significantly more confident in post-session. Participants' responses showed significant improvement in confidence in figuring out meals and snacks at home (*MEAL* in Table 2; p = 0.0179*) and following an ideal diet (*IDEAL_DIET*; p = 0.0044**). Questions concerning self-efficacy in the use of technology (*TECH1* through *TECH6*) generated responses that showed the entire sample was overall more confident and more inclined to use technology designed to support self-management. For all technology use questions, the responses were significantly different in the post-session, except for use of website to gain health information (*TECH3*). The marginal increase in *TECH3* was reflective of only some pairs using websites on their smartphones for health information during the session. The participants felt significantly more confident in using technology designed to help with their health (*TECH1*), obtaining help needed to use technology (*TECH2*), downloading a health application (*TECH4*), helping others use technology (*TECH5*), and also felt better when others help them use technology (*TECH6*).
Interestingly, on privacy concerns and safety of information in using technology (*TECH7*), a significant difference (p = 0.0108*) was observed despite privacy and safety not being directly addressed in the health education session. Post-session, participants were found to have increased self-efficacy for technology use and less concerned about the safety of information when using technology to help to maintain health (*TECH7*).

Similar tests of difference for just the older adults found similar effects as the entire sample (please see Table 3). The change of response for all three exercise questions (i.e., *EXER1*, *EXER2* and *EXER3*) was similar to that of the entire sample. For the number of times per week individuals can engage in vigorous physical exercise (*EXER2*) or walk more than 20 mins (*EXER1*), the mean response increased (from 2.68 to 3.00) but the increase was non-significant. However, for the perceived effort necessary to exercise (*EXER3*), the mean response *decreased* significantly (from 3.39 to 3.05), indicating an *increase* in self-efficacy. Older adults' responses concerning dietary behavior showed a significant change in self-efficacy of following the ideal diet (p = 0025**). Further, self-efficacy in figuring out meals and snacks at home (*MEAL*) showed a significant (p = 0.0359*) increase (from mean response 3.95 to 4.23) as well. Regarding the use of technology, the seminar had similar effects on the older adults as the entire sample, except for getting help from others to use technology (*TECH6*), for which the mean response increase from pre (M = 3.84) to post-session (M = 4.10) was non-significant (p = 0.0561).

It is worth noting that, post-seminar, older adults were significantly less concerned (p = 0.0426*) about the safety of their information when using technology (*TECH7*), even though the health education session did not specifically address this topic.

Although the health education session was aimed at the older adults who self-reported a diabetes diagnosis, the test results for younger adult participants were significant for most of the measurements, even though the level of significance observed was lower than either the entire sample or the older adults. For example, no significant difference (p = 0.2556) was observed in self-efficacy to figure out meals and snacks at home (*MEAL*). For the use of technology to support self-management, the younger adults showed a significant difference for 5 items (*TECH2* to *TECH6*), except for *TECH1* even though the level of significance is lower than what was observed for either the entire sample or the older adults. For young adults, confidence in using technology designed to help with the health (*TECH1*) increased from pre (M = 4.12) to post-session (M = 4.40), however the increase was non-significant (p = 0.1048). Of note is the significant change of response (p = 0. 0340*) concerning the safety of information while using technology (*TECH7*), as was the case for the entire sample and the older adults.

Discussion

This study used a novel approach to address persistent health disparities for African American older adults with diabetes from two urban centers. This is the first study we are aware of that describes the effectiveness of intergenerational technology transfer in enhancing self-efficacy of diabetes self-management. We found evidence to support the efficacy of the seminar, which was informed by the intergenerational technology transfer model. The seminar resulted in enhanced self-efficacy concerning the use of digital technology to support diabetes self-management, for *both* the older adults with diabetes and their selected younger adult participants. Unlike previous studies that applied an intergenerational knowledge transfer approach with parent-child dyads,[14] this study utilized pairs of older and younger adults that had an established relationship but may not have been related. In this study, older adults were found to be receptive and willing to learn from younger adults. Interestingly, both the younger and older adults showed eagerness in helping others to use technology (*TECH5*) to support self-management, however the increase of willingness was more significant for older adults than their younger counterparts. Both groups of participants demonstrated increased pro-exercise attitudes (e.g., the number of times the participant can walk for 20 minutes per week (*EXER1*) or do rigorous exercise (*EXER2*)), however, the change was non-significant. Moreover, both groups of participants showed a significant decrease in the perception of effort required to do any physical exercise (*EXER3*), though the average decrease was more significant for older adults than the younger adult group. We posit that this is due to the younger adult participants indicating a more pro-exercise attitude towards self-management than the older adults did before participation. Privacy concerns regarding technology use were not addressed directly in the health education sessions; however, the older adults were less concerned about privacy concerns related to technology (*TECH7*) in the post-session when compared to the pre-session.

Also, the level of social support is associated with chronic disease self-management in older adults.[33,34] The interactive health-education sessions provided an opportunity to enhance social support through intergenerational technology exchange. Younger adult participants were interested in understanding recommended chronic disease self-management (e.g., diet and exercise) to better assist their paired older adult participants in self-management. Previous studies that utilized parent-child dyads who both were diagnosed with hypertension, the chronic condition of interest, found support to be a positive influence on recommended self-management for hypertension.[14] Thus, future research should consider the role of perceived social support for younger adults who may not be diagnosed with a chronic condition, and for older adults concerning the adoption and sustained use of technology. Also, future research should further explore perceptions concerning privacy and security, as they are among known barriers to technology use, especially among older adults.[35]

Last, there are considerable public health implications given the persistent chronic disease outcomes disparities and barriers to acceptance and the use of technologies designed to support recommended self-management. Health educators and other practitioners should be aware of the potential of novel approaches to teach the use of technology to support recommended chronic disease self-management. Also, they should consider the potential of engaging with populations to design and conduct health education and technology interventions to address persistent inequity.

A major strength of this study was evaluating the impact of a seminar that was created using a CBPR approach informed by participatory design. Through the use of CBPR, the study team was able to administer a tailored seminar to address the needs of the targeted sample/community. The study team represented researchers from two universities in partnership with a faith-based organization (FBO), based in Flint, Michigan. CBPR informed the study conception and design. This study resulted from an existing partnership between the study PI (CRS) and the third author (TC). They had published ogether and were joined by the second author (DSH) to design the study and write the grant that funded the project. Each of the three was involved in the study design, data collection, analysis, and dissemination. The study approach included representatives of the target population in all aspects of the research process, from ideation to authority and authorship.[27] For health equity research, CBPR is increasingly used to inform projects designed to meet the needs of target communities.[28] FBO staff were an essential part of the research team. They provided their perspectives and recommendations at the very onset of the project. Throughout the project, the study team collaborated closely with staff from the FBO to help lead participant recruitment, identify venues, and schedule times and locations convenient and familiar to participants. They also coordinated transportation for study participants as needed, identified community partners to host sessions, led the facilitation of selected sessions and assisted facilitation in others, and supported data collection and analysis. The approach utilized in this study should be tested in other communities to evaluate the generalizability of the findings. Further, this study had a small sample size characteristic of community-based health promotion with populations underrepresented in research, which impacted the level of statistical analysis that could be used. The small sample size also limits the generalization of the findings. A longitudinal design that captures self-report and clinical data (e.g., HbA1c) is necessary to evaluate the impact of the seminar on the sustained use of technology, and the impact on health outcomes.

This study identified that participation in an interactive health education session helped to address persistent barriers to technology self-efficacy and use. The use of technology should be incorporated into chronic disease health education to help address persistent inequity. Practitioners and health educators should consider interactive sessions, which include an identified support person, which can help support the chronic disease patient's use of technology, particularly for individuals from groups that experience health disparities and barriers to technology use. Future research should consider the impact of intergenerational technology transfer sessions for emerging technology designed to support recommended self-care for other common chronic conditions. This paper serves as a pathway for addressing gaps in published research on health outcomes and technology use in support of chronic care for African Americans who reside in urban centers, and other health populations that experience persistent chronic disease disparities and barriers to technology use.

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Table 1 - Descriptive Statistics for the entire sample

	Total Sample (n=65)	Older adults (n=39)	Younger adults (n=26)
Age (years), M(SD)	49.31(16.72)	61.46(6.83)	31.08 (8.30)
Age Range	19-82	52-82	19-48
Gender			
Male	38	21	17
Female	26	18	8
Marital Status			
Married	10	9	1
Single	46	22	24
Widowed	5	5	0
Divorced	3	2	1
Living Arrangement			
Alone	32	27	5
With Spouse Only	9	5	4
With Spouse and Children	6	3	3
With Children	6	2	4
Other	11	2	8
Education			
Some High School	17	11	6
High School Diploma/GED	22	14	8
Some College	19	10	9
College Graduate	6	4	2
Employment Status			
Employed	15	5	10
Unemployed	15	3	12
Retired	8	8	0
Disabled	26	23	3
Household Income			
<$14,000	25	11	14
$15,000-$24,999	12	9	3
$25,000- $34,999	11	7	4
$35,000- $49,999	1	0	1
$50,000+	1	1	0
Health Insurance			
No	7	2	5
Yes - through Employment	6	5	1
Yes - through Spouse	1	1	0
Yes - Medicare	19	13	6
Yes - Medicaid	28	17	11
Yes - Other Coverage	4	1	3
Difficulty in Paying for Healthcare Treatment			

Technology to Support Self-Management

	Total Sample (n=65)	Older adults (n=39)	Younger adults (n=26)
Always	10	6	4
Very Frequently	5	3	2
Occasionally	6	4	2
Rarely	8	6	2
Very Rarely	3	2	1
Never	31	16	15

Table 2 - Items from pre and post-session questionnaires

Theme of item	Question (Variable name)
Exercise (3 items)	How many days per week, on average, can you walk more than 20 minutes at a time? (*EXER1*) How many days per week, on average, can you engage in vigorous physical exercise such as running, swimming, tennis, dancing, vigorous hard work, housework, or work on your job? (*EXER2*) It will take a lot of effort to exercise. (*EXER3*)
Dietary behavior (2 items)	I can figure out meals and snacks at home. (*MEAL*) I can follow an ideal diet. (*IDEAL_DIET*)
Use of technology designed to support self-management *7 items)	I can use technology designed to help me with my health (*TECH1*) I can get the help I need to use technology to help me with my health (*TECH2*) I have used websites to get health information (*TECH3*) I can download a health app (*TECH4*) I like helping others use technology (*TECH5*) I like when others help me use technology (*TECH6*) My personal information is safe when I use technology to help me with my health (*TECH7*)

Table 3 - Comparison of pre and post-session responses for the entire sample ($p<0.05$*, $p<=0.01$**, $p<=0.001$***)

Questions (Outcome)		Pre-session Responses		Post-session Responses		N	Difference between pre and post session
		M	SD	M	SD		*p*-value
Exercise confidence	(*EXER1*)	2.65	1.52	3.00	1.55	40	0.1395
	(*EXER2*)	2.47	1.44	2.72	1.55	34	0.9343
	(*EXER3*)	3.19	1.25	2.95	1.25	57	0.0185*
Diet and food conf.	(*MEAL*)	3.97	0.84	4.23	0.75	63	0.0179*
	(*IDEAL_DIET*)	3.79	0.89	4.05	0.76	62	0.0044**
Confidence in use of technology	(*TECH1*)	3.89	0.89	4.34	0.62	62	0.0002***
	(*TECH2*)	3.81	0.97	4.30	0.68	62	0.0003***
	(*TECH3*)	3.42	1.21	3.69	1.19	62	0.1534
	(*TECH4*)	3.57	1.14	4.06	0.94	62	0.0005***
	(*TECH5*)	3.53	1.14	4.06	0.85	62	0.0003***
	(*TECH6*)	3.90	0.83	4.20	0.76	61	0.0039**
	(*TECH7*)	3.80	0.87	4.03	0.81	55	0.0108*

Table 4 - Comparison of pre and post-session responses for older adults ($p < 0.05$*, $p <= 0.01$**, $p <= 0.001$***)

Questions (Outcome)		Pre-session Responses		Post-session Responses		N	Difference between pre and post session
		M	SD	M	SD		*p*-value
Exercise confidence	(*EXER1)*	2.97	1.64	3.38	1.45	29	0.1644
	(*EXER2*)	2.68	1.59	3.00	1.67	22	0.7737
	(*EXER3*)	3.39	1.25	3.05	1.29	36	0.0233*
Diet and food conf.	(*MEAL*)	3.95	0.86	4.23	0.74	39	0.0359*
	(IDEAL_DIET)	3.79	0.87	4.08	0.66	38	0.0025**
Confidence in use of technology	(*TECH1*)	3.74	0.98	4.31	0.66	38	0.0011**
	(*TECH2*)	3.60	1.05	4.21	0.77	38	0.0033**
	(*TECH3*)	3.05	1.23	3.46	1.17	38	0.0780
	(*TECH4*)	3.29	1.23	3.85	1.09	38	0.0066**
	(*TECH5*)	3.50	1.17	3.87	0.98	38	0.0005***
	(*TECH6*)	3.84	0.87	4.10	0.79	37	0.0561
	(*TECH7*)	3.71	0.86	4.07	0.71	35	0.0426*

Table 5 - Comparison of pre and post-session responses for the younger adults ($p<0.05$*, $p<=0.01$**, $p<=0.001$***)

Questions (Outcome)		Pre-session Responses		Post-session Responses		N	Difference between pre and post session
		M	SD	M	SD		*p*-value
Exercise confidence	(*EXER1)*	1.82	0.75	2.0	1.41	11	0.495
	(*EXER2*)	2.08	1.08	2.14	1.10	12	0.4237
	(*EXER3*)	2.86	1.31	2.8	1.19	21	0.0386*
Diet and food conf.	(*MEAL*)	4.0	0.83	4.24	0.78	24	0.2556
	(IDEAL_DIET)	3.79	0.93	4.00	0.91	24	0.0389*
Confidence in use of technology	(*TECH1*)	4.12	0.68	4.40	0.58	24	0.1048
	(*TECH2*)	4.12	0.74	4.44	0.51	24	0.0263*
	(*TECH3*)	4.00	0.93	4.04	1.17	24	0.9163
	(*TECH4*)	4.00	0.83	4.40	0.50	24	0.0310*
	(*TECH5*)	4.12	0.80	4.36	0.49	24	0.0251*
	(*TECH6*)	4.00	0.78	4.36	0.70	24	0.0305*
	(*TECH7*)	3.95	0.89	3.96	0.98	20	0.0340*