5-2022

An Assessment Evaluating the Possible Participation of a Virtual Nutrition Education Program for Older Adults

Ashlyn Cobble

An Assessment Evaluating the Possible Participation of a Virtual Nutrition Education Program for Older Adults

By

Ashlyn Cobble

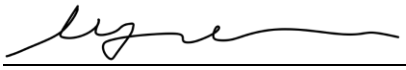
An Undergraduate Thesis Submitted in Partial Fulfillment of the
Requirements for the
Honors In Discipline Scholars Program
Honors College and
the
Honors In Disciple Nutrition Program
College of Clinical and Rehabilitative Health Sciences
East Tennessee State University

4/26/2022

Ashlyn Cobble Date

4/26/2022

Dr. Whitney Bignell, Thesis Mentor Date



4/26/2022

Ms. Mary Andreae, Reader Date

Research Question

While older adults may be hesitant to address health-related topics using traditional online patient-care portals, online nutrition education programs may be beneficial for this population. Virtual programs such as this would benefit seniors by helping to reduce the number of health issues, to allow for older adults to socialize virtually, and to spread health-related awareness to a vulnerable population. This type of program is also a great alternative for those with mobility issues. This research project investigated the need for and preferred delivery model of a virtual nutrition education program for older adults within communities across the northeast Tennessee region. Specifically, this project examined older adults' access to and use of the internet and social media platforms, comfort with technology, and preferred class format if interested in nutrition education.

Abstract

The importance of proper nutrition education among older adults is crucial in promoting overall physical health and management of chronic health conditions. However, access to such education has been limited, especially during the COVID-19 pandemic. With the current boom in social media popularity, as well as virtual communication portals such as Zoom, the question must be asked if nutrition education could be effectively implemented for the use of older adults through these electronic channels. The study design for this particular research was a cross sectional survey to inform development of an online nutrition education program for older adults in Northeast Tennessee. (Appendix B). The survey was distributed as a paper-based survey in seven senior centers and as an online Qualtrics survey distributed by all senior center directors in Northeast Tennessee. A total of 160 surveys were collected (61 paper-based, 99 online), with 150 surveys being complete. Frequencies showed that the majority of participants have internet access and use social media platforms, such as Facebook and YouTube, which was not affected by home location, such as rural versus urban. Most participants were interested in participating in a nutrition education program. The survey also revealed more information about seniors in Northeast Tennessee that will be helpful when developing this program.

Table of Contents

Research Question	2
Abstract	3
Introduction	5
Method	9
Results	10
Table 1	14
Table 2	15
Table 3	16
Discussion	17
Recommendations	19
Conclusions	20
References	21
Appendix A	22
Appendix B	25
Appendix C	38

Introduction

The purpose of the research study was to assess the technology and nutrition-related needs related to the development of a virtual nutrition education program for older adults throughout the Northeast Tennessee region. Providing nutrition education to older adults could help reduce current health problems and prevent future issues from arising. While online communication portals and social media continue to grow in popularity, the question must be asked: would implementing a virtual nutrition education program be a beneficial way of spreading awareness to the older adult population? Additionally, in order to fully answer this question, the preferred social media platforms and communication channels of older adults were explored.

Understanding current social media trends in older adults will help identify the best possible channels or modalities to offer nutrition education. While teenagers and younger adults may be using TikTok and Instagram, these platforms may not be the best choices for the target audience of the virtual nutrition education project. Social media use among older adults has increased in the past several years. In fact, users over the age of 50 doubled from 2009 to 2010, from 22% to 42% (Madden, 2020). Out of that growth, it appeared that platforms such as Myspace, Facebook, and LinkedIn were favored by older adults (Madden, 2020). Spreading nutrition awareness to older adults through Facebook would be the favorable option of those three due to its popularity and general user friendliness. Additionally, educational videos could be uploaded to Facebook, which could be very beneficial to the larger project's objectives. Additionally, email communication is popular among most older adults, with 89% of those 65 years old or greater sending or receiving emails at least once per day (Madden, 2020). This information is important to keep in mind for this research project, as it may indicate that an email subscription list could be an effective channel for virtual nutrition education.

The expansion of nutrition education implementation to social media platforms for older adults has the possibility to produce numerous benefits. For example, bringing greater general nutrition awareness to new audiences at risk for chronic health conditions may delay or prevent progression of these diseases. Additionally, the amount of socialization among older adults has been shown to directly impact their overall health. Nutrition education among social media platforms not only increases overall knowledge among a community but also increases social support, which has been shown to increase the chances of aging well (Leist, 2013). Socialization also impacts emotional health, as engaging in social connections, even online, can decrease loneliness in older adults and improve overall mood (Leist, 2013). Improved mood can lead to increased motivation to implement lifestyle changes that could further improve their overall health and wellbeing. Ideally, the implementation of nutrition education through virtual channels and social media platforms would work hand-in-hand as enhanced knowledge and socialization opportunities could increase the chance that an individual may apply the information to their current lifestyles and routines. It may be argued that social media is not the best route to choose to educate older adults since it is generally a new communication channel for their generation. While it is true that there may be a learning curve, it is important to consider that due to physical limitations or mobility issues, social media is a great option for those that cannot easily attend an educational class or meet with a registered dietitian nutritionist to discuss their needs. Impaired mobility, or even time constraints, can create barriers when it comes to accessing nutrition education among older adults, which suggests that virtual accessibility could be a positive concept for nutrition education expansion (Leist, 2013). All in all, the addition of nutrition education utilizing virtual access can help to increase overall socialization among older adults, which is positively correlated with overall physical and mental health.

The idea of increasing virtual nutrition education to promote overall physical and mental health is promising in theory, but is there any prior research showing that older adults may be open to the idea of utilizing technology, even if it is not necessarily one of their norms? A study in 2013 that examined the use of social media among older adults showed some promising results (Bell et al., 2013). In this study, 268 surveys were distributed via email or mail (pencil and paper submissions) to Georgia Tech Homeland participants. Out of 268, 142 surveys were submitted. Out of these 142, it was found that 47 were male and 95 were female, the average age among participants was 71.64 years, and 59 participants (42%) were current Facebook users while 83 participants (58%) were not current Facebook users. It was also shown that females are more likely to use Facebook than males. The survey measured these users and nonusers on overall loneliness and social satisfaction, confidence with technology, and attitudes toward information technology. When it came to loneliness and social satisfaction there were a few surprising findings. There was not a significant difference in loneliness between Facebook users and nonusers. However, Facebook users scored significantly higher in their level of social satisfaction. In fact, the mean score for Facebook users was 54.86 while nonusers had a mean score of 50.84 (Bell et al., 2013). When evaluating results associated with confidence with technology, Facebook users reported an overall greater confidence in their ability to learn to use new technology with their mean score being 78.73, and nonusers only scoring a mean of 64.83 (Bell et al., 2013). With this knowledge, the question must be asked if it is possible that this confidence could also promote confidence in their own control over nutritional status if general nutrition education was provided over virtual platforms such as Facebook. Additionally, general attitude towards information technology showed a significant difference between Facebook users and nonusers. Users scored 2.55 on average while nonusers scored an average of 1.98 (Bell et al., 2013). This result shows that Facebook users seem to consider information technology as having more of an impact than non-users. Again, this leads to a question about whether or not a positive

attitude shift toward general nutrition information is possible if the nutrition education is implemented through social media platforms. These research results support the idea that by implementing nutrition education through virtual platforms, older adults' overall health can benefit, not only physically, but also mentally by increasing socialization status and overall confidence.

When considering virtual implementation for nutrition education, one concern is the overall practicality of having older adults rely on newer technology options for important, health related information. Different approaches to effective education methods need to be considered due to this intended audience. By understanding the ways in which older adults prefer to receive information, one can create more successful strategies for effective nutrition education delivery. A study in 2004 reported some ways that older adults learn and perceive information best. For example, older adults tend to prefer small amounts of information at a time, instead of different concepts that are larger in size and vary in range (Chambers, 2004). This finding is useful when it comes to overall nutrition education so that nutrition educators can provide concepts in simple and direct ways; for example, the use of a bulleted list, or a social media post focusing on one topic. Next, it was found that older adults are active readers of nutrition label information and enjoy learning practical information that can be easily applied to daily life, which can be found in recipes, quizzes, dietary self-assessments, and meal planning tips (Chambers, 2004). This insight can be used to make virtual implementation more useful for the older adult by practicing simple recipe posts, providing meal preparation information, and offering possible online surveys. Lastly, it was found that large print materials are appropriate for older adult populations; additionally, the color and overall contrast may have a direct impact on the legibility of the information. It was found that older adults best perceived and understood information that was printed with white on black or black on white color schemes (Chambers, 2004). While it may

seem obvious, it is crucial to ensure that the information being shared can be seen and understood clearly so that proper education is achieved.

Implementation of virtual nutrition education for older adults has the potential to be successful in promoting overall physical and mental health. After reviewing the literature and research available, it has become clear that a strategic approach is necessary. This educational program may benefit not only the nutrition-related health of participants but also enhance socialization and possibly improve their mental health. In addition, increasing technology confidence may also increase participants' personal confidence and motivation to take control over their own nutritional status and health. Finally, by providing posts that are concise, simple, easily applicable, and properly formatted in font size and color contrast, successful nutritional education among older adults through virtual platforms may be achievable. Again, this goal is very promising and has great potential when it comes to the overall benefit of the older adult population. Therefore, the purpose of this study was to determine if virtual nutrition education is possible for older adults in Northeast Tennessee related to internet access and use, and if so, which channels would be most effective to communicate nutrition information.

Method

The study design was a cross sectional survey to inform development of a virtual nutrition education program for older adults in Northeast Tennessee. The survey was developed by researchers at East Tennessee State University (including this Honors-In-Discipline student) and University of Tennessee Extension based on questions from validated instruments (i.e., USDA Household Food Security Module: Six-Item Short Form), a needs assessment questionnaire for similar audiences and purposes in Iowa, and research questions of interest to the research team (Appendix B). The survey was distributed to a convenience sample of older adults across Northeast Tennessee through on-site administration of paper surveys at seven senior

centers by the research team and through a link to an online Qualtrics survey distributed by senior center directors through email newsletters and social media posts. An informed consent statement was provided as the first question on the online survey, with participants selecting, "Yes, I agree" to acknowledge their consent. Participants who completed the paper surveys signed a consent form. Responses from paper surveys were entered into the online Qualtrics survey form by research team staff. All data was downloaded from Qualtrics and uploaded to statistical analysis software (SPSS v. 28.0), where it was cleaned and additional variables coded (i.e., paper vs. online survey). The data analysis for this project focused on survey questions (#1, 2, 4, 5, 7, 8, 31, 33, 38) to assess access to the internet, general use of social media platforms, comfort level using social media and technology, devices used to access the internet, general interest related to possible nutrition education classes, preferred class formats, county the participant resides in, and current social interaction levels. These questions were chosen to explore overall access to the internet and preferred virtual education platforms and materials of interest. Frequencies and cross-tabulations were conducted to examine differences among responses for participants living in urban, rural, and suburban areas (self-reported). All methods were approved by the University of Tennessee Knoxville (UTK) Institutional Review Board (UTK IRB-21-06674-XP; expiration date 12/06/2022) and East Tennessee State University Institutional Review Board as relying on the UTK IRB (c1221.1; expiration date 12/06/2022) before implementation of the survey.

Results

A total of 160 surveys were collected (89 online surveys and 61 paper surveys). Of the online surveys, 10 were considered incomplete (less than 75% of questions answered) and deleted from the sample. The total sample size for analysis was 150 (79 online surveys and 61 paper surveys). The number of females that participated in the survey was higher than males,

totaling 74.3% versus 25% (Table 1). It is therefore possible that females may be more inclined to participate in the education program since they were more likely to complete the survey. Many participants had experience in higher education, with approximately 20.9% completing a bachelor's degree, and 29.7% completing some post-graduate work or an advanced degree. This shows that many potential program participants are well-educated, which may influence the type of content provided in the program. While there were participants from all counties in Northeast Tennessee (Carter, Greene, Hancock, Hawkins, Johnson, Sullivan, Unicoi, and Washington), most participants lived in Washington (54.9%) or Sullivan (20.1%) counties. The virtual nutrition education will be tested in Carter, Johnson, Sullivan, and Washington counties based on input from key stakeholders at the First Tennessee Area Agency on Aging and Disability. Therefore, it is important to consider the need for a variety of recruitment strategies to increase participation in particularly Carter County. When focusing on income, interestingly enough, there was almost an equal split among those that earned an annual household income of above $50,000 and those that earned below $50,000 (46.6% and 53.4%, respectively). This information is helpful in considering budgetary concerns and economic factors when the education program is being developed.

Table 2 focuses on internet access and social media use by participants' home location (in a city, rural, or suburban area). This information is relevant in order to determine if there are any differences in internet accessibility among participants in these areas that need to be consider as the virtual nutrition education program is developed. Because responses to questions about local of internet access, devices used, and social media used were multiple response questions, traditional chi-square analyses were not able to be performed. Therefore, results are reported as number and percentage of responses within each home location category. The majority of participants accessed the internet from their home (91.9%). On the other hand, 10.7% accessed

the internet from the senior center, and 4% did not access the internet at all. Interestingly, the majority of participants living in each type of location report accessing the internet from home, and over 50% in each location report using a computer to access the internet. This data is a key finding due to the fact that the program being developed is a virtual program, so having proper information regarding how participants can access the internet is essential. When looking at social media, Facebook was the preferred platform among the participating older adults with 68% of total participants using it. YouTube and Pinterest were also popular, with 53.1% and 25.9% total participants using these platforms, respectively. More than 50% of participants living in each type of location report using Facebook. YouTube, on the other hand, is more popular among participants living in suburban areas (71.8% versus 47.2% in a city and 45.5% in a rural area, respectively). About 20.4% of participants reported not using social media. This information aids understanding of the best platforms to consider using for the virtual nutrition education program so that it will be accessible to the greatest number of potential participants.

Table 3 includes information related to email usage, overall comfort level with technology, and preferred class format. Most participants reported feeling somewhat comfortable to very comfortable with technology (71.6%). About 10.8% of total participants disclosed that they were not comfortable at all while 17.6% of total participants reported not using technology. This information is helpful to the development of the program as it offers an idea of the older adults in the area that would participate in the program if it was solely accessible through online portals. A larger number of participants could be reached if some educational sessions were perhaps in-person. In fact, many seniors prefer in-person class options (58.8%). On the other hand, 34.4% of participants prefer recorded videos online. Once again, a hybrid approach combining in-person sessions or trainings with online videos may help the program reach more participants.

Additional information provided by older adults showed that the majority would be interested in attending a class about nutrition, wellness, and physical activity, accounting for 37.2% of total participants (data not shown). Overall interest to participate is very important information for the design and development of this program. Additionally, 35.8% of seniors expressed that they were uncertain if they were interested in participating. Future research should focus on how to promote the program and encourage those to participate that may be undecided.

Finally, the majority of participants appeared to be socially engaged, with 64.2% participating in social activities three or more times per week, and 20.3% participating in social activities 1-2 times per week (data not shown). This feedback shows that the majority of these participants enjoy social involvement. Promotion of this program should incorporate the opportunity to socialize virtually, in addition to learning about nutrition. Of those who reported minimal socialization defined as one time or less each month (9.0%), 55.6% of those lived in a city, while only 22.2% lived in a rural area. This statistic is surprising since most cities offer community-involvement activity options while rural areas may offer less of these opportunities.

Table 1

Sociodemographic Characteristics of Participants by Location of Home

Characteristic	In a city		In a rural area		In a suburban area		Total	
	n	%	n	%	n	%	n	%
Gender					6			
Male	14	26.4	17	30.9		15.0	37	25
Female	39	73.6	37	67.3	34	85.0	110	74.3
Self-described	0	0.0	1	1.8	0	0.0	1	0.7
Education*	1	1.9	2	3.6	0	0.0	3	
Less than high school diploma								2.0
High school diploma	15	28.3	9	16.1	5	12.8	29	19.6
Some college, including associate's	16	30.2	12	21.4	13	33.3	41	27.7
Degree								
Bachelor's degree	9	29.0	18	32.1	4	10.3	31	20.9
Some post-graduate work or ad-	12	22.6	15	26.8	17	43.6	44	29.7
vanced degree								
Race	1	1.9	0	0.0	0	0.0	1	
Black or African-American								0.7
White/Caucasian	52	98.1	52	96.3	40	100	144	98.0
Self-described	0	0.0	2	3.7	0	0.0	2	1.4
Marital Status	1	1.9	5	8.9	2	5.0	8	
Never married								5.4
Currently married	25	47.2	38	67.9	23	57.5	86	57.7
Separated	1	1.9	0	0.0	0	0.0	1	0.7
Divorced	7	13.2	6	10.7	7	17.5	20	13.4
Widowed	19	35.8	7	12.5	8	20.0	34	22.8
County of Residence**	2	4.1	1	1.8	2	5.0	5	
Carter								3.5
Greene	0	0.0	6	10.9	1	2.5	7	4.9
Hancock	0	0.0	1	1.8	0	0.0	1	0.7
Hawkins	1	2.0	1	1.8	0	0.0	2	1.4
Johnson	4	8.2	14	25.5	1	2.5	19	13.2
Sullivan	17	34.7	3	5.5	9	22.5	29	20.1
Washington	24	49.0	28	50.9	27	67.5	79	54.9
Outside of Northeast Tennessee	1	2.0	1	1.8	0	0.0	2	1.4
Annual Household Income								
Less than $50,000	28	59.6	26	52.0	17	12.8	71	53.4
More than $50,000	19	40.4	24	48.0	19	52.8	62	46.6

Note. $N = 150$. Some participants did not respond to certain demographic characteristics. Total *n* reflects number of participants without missing data for characteristic. Participants were on average 71 years of age ($SD = 7.9$). A one-way ANOVA showed that there was a difference in mean age based on location of home ($p = 0.021$). Participants living in a city were slightly older (mean age = 73.7 years) than those living in a rural area (mean age = 69.6 years) or those living in a suburban area (mean age = 70.8 years). *Pearson C^2 $p < 0.05$; **Likelihood Ratio $p < 0.05$.

Table 2

Internet Access and Social Media Use by Location of Home

Characteristic	In a city		In a rural area		In a suburban area		Total	
	n	%	n	%	n	%	n	%
Location of Internet Access								
Home	46	86.8	53	94.6	38	95.0	137	91.9
Library	2	3.8	2	3.6	3	7.5	7	4.7
Senior center	3	5.7	7	12.5	6	15.0	16	10.7
Friend or relative's home	4	7.5	4	7.1	1	2.5	9	6.0
I do not access the internet	4	7.5	2	3.6	0	0.0	6	4.0
Other location	5	9.4	5	8.9	3	7.5	13	8.7
Devices Used to Access Internet								
Computer	28	54.9	40	72.7	24	63.2	92	63.9
Smart phone	30	58.8	22	40.0	16	42.1	68	47.2
Tablet	14	27.5	16	29.1	11	28.9	41	28.5
Other	9	17.6	8	14.5	6	15.8	23	16.0
Social Media Use Facebook								
	35	66.0	32	58.2	33	84.6	100	68.0
Instagram	6	11.3	8	14.5	9	23.1	23	15.6
LinkedIn	4	7.5	5	9.1	4	10.3	13	8.8
Pinterest	8	15.1	18	32.7	12	30.8	38	25.9
SnapChat	3	5.7	3	5.5	2	5.1	8	5.4
Twitter	0	0.0	3	5.5	4	10.3	7	4.8
YouTube	25	47.2	25	45.5	28	71.8	78	53.1
TikTok	4	7.5	3	5.5	2	5.1	9	6.1
I do not use any social media	14	26.4	13	23.6	3	7.7	30	20.4

Note. $N = 150$. Responses reflect multiple response questions; therefore, total *n* may be greater than total number of participants.

Table 3

Email Use, Comfort with Technology, and Preferred Class Format by Location of Home

Characteristic	In a city		In a rural area		In a suburban area		Total	
	n	%	n	%	n	%	n	%
Frequency of Email Use								
Every day	36	69.2	46	82.1	33	82.5	115	77.7
3-4 times a week	7	13.5	4	7.1	3	3.8	14	9.5
1-2 times a week	1	1.9	2	3.6	1	2.5	4	2.7
Less than once per week	4	7.7	0	0.0	1	2.5	5	3.4
I do not have a personal email address	4	7.7	4	7.1	2	5.0	10	6.8
Comfort with technology (i.e., Zoom)			8					
I do not use technology-based education	14	26.4		14.5	4	10.0	26	17.6
Not comfortable at all	6	11.3	7	12.7	3	7.5	16	10.8
Somewhat comfortable	14	26.4	13	23.6	14	35.0	41	27.7
Comfortable	10	18.9	20	36.4	10	25.0	40	27.0
Very comfortable	9	17.0	7	12.7	9	22.5	25	16.9
Preferred class format								
In-person group session	29	64.4	27	52.9	21	60.0	77	58.8
Online group session	1	2.2	4	7.8	3	8.6	8	6.1
Online videos that I can access on my own	15	33.3	19	37.3	11	31.4	45	34.4
Telephone group session	0	0.0	1	2.0	0	0.0	1	0.8

Note. *N* = 150. Some participants did not respond to certain questions. Total *n* reflects number of participants without missing data for question. There were no statistically significant differences among groups.

Discussion

The results of this survey are crucial towards understanding the practicality of implementing a virtual nutrition education program to seniors in this region based on accessibility and preference. Information about how participants access the internet and which social media platforms are preferred will help the research team design the program to reach as many seniors as possible. Also, information shows potential barriers that will need to be addressed, such as providing supports to some participants who are less comfortable with technology.

Results from this survey help inform the development of this virtual nutrition education program; however, additional information will need to be assessed to ensure that potential barriers are addressed prior to program implementation. It will be important to determine best practices for recruiting participants and ensuring their continued participation in the program, as the initial plan includes six to eight sessions. Seniors may show interest in their feedback to the survey but may not actually participate once the program is offered. Additionally, the survey can only assess comfort levels that each senior has with overall technology use based on each individual's own version of ranking. One participant's version of being comfortable with technology may mean logging on to a computer, while someone else's may mean sending emails, posting on Facebook, accessing Zoom calls, etc. While the survey results provide an idea of the general level of comfort seniors have with technology, there is a limitation when it comes to assessing the actual familiarity with and use of technology that is needed for the basic access and understanding of the program being developed.

There are a few limitations to be acknowledged in this study. The first being that the sample being taken was a convenience sample, meaning that the pool of participants were those

that were most convenient to gather data from due to factors such as location. This sampling method can create some limitations such as creating results that are difficult to replicate. This issue can occur for many reasons, but one main reason for this particular survey could be biased results due to the reasoning behind why some chose to take the survey versus the reasoning behind those who chose not to. For this purpose, the results gathered could be hard to replicate if the survey was performed on a different day with a different group of older adults, for example. To add to this thought, this study lacks the ability to represent all older adults. This is linked to the fact that the survey was performed primarily through the use of senior centers, so the results gathered will really only represent the thoughts and opinions of older adults already participating in senior center activities. In order to combat this limitation, the survey would need to have more promotion and accessibility to a wider variety of seniors in the area.

On the other hand, there are also several strengths to this study. The first being that the study was available both by paper and online. This gave participants an equal opportunity to take part in the study, regardless of internet accessibility. Additionally, those that participated in the paper, in-person version of the survey had the opportunity to take the survey with them to complete on their own time. This gave participants more flexibility and time to complete their surveys, ensuring more attention to detail and less rushed responses. Lastly, this study did a good job at targeting older adults that are most likely to participate in the proposed educational program. While going through senior centers to distribute the surveys is a limitation due to the inability to represent all older adults, it also creates a strength when viewed from a different angle. This way of survey distribution targets a population that is already more inclined to participate in such a program since these older adults are generally already health-focused. This provides data that may be less skewed with information from older adults that are less likely to even participate in a program such as this to begin with. While on one hand this causes a lack of

representation, on the other it creates better feedback when it comes to the development and design process of the program.

Recommendations

Providing a shorter, more concise survey for older adults would help to ensure attention to detail on each question. Ideally, a survey that could be completed in under ten minutes would help to better ensure that questions have been read carefully rather than possibly being skimmed. Additionally, an incentive opportunity provided to those that fill out the online version of the survey could provide more feedback. In person survey participants received an incentive in the form of snacks, so an incentive for online surveys would help to create equal opportunity among the two groups. Allowing for more time for surveys to come back before collection would help to provide more feedback. This would give seniors, especially those with a busier schedule, more flexibility to turn in their surveys on their own time. This could help to provide more thoughtful feedback since participants will not feel as rushed, as well as provide more completed surveys in general.

The survey could be altered to ask more about education needs for those without access to the internet or social media. This could include feedback on ways they may wish to be involved in the nutrition education program while not being required to have internet access.

Including this in the survey would capture information from more seniors instead of just those with internet access. This would also help to provide an idea of how to go about providing nutrition education through this program to those without internet access, if necessary.

The survey was given to seniors primarily through the outreach of senior centers. The participants may not be representative of all older adults who may benefit from the proposed virtual nutrition education program. Seniors that attend classes and events held at senior centers

may already be health-focused individuals whose feedback is more skewed towards positive nutrition education interest. It would be helpful to get more well-rounded feedback from individuals that may have other priorities rather than their health or nutrition status in order to possibly reach more seniors that may not be involved in local senior centers. This could be done by promoting the online version of the survey through flyers at local restaurants, banks, doctors' offices, health departments, parks, etc. Additionally, the paper version could be sent out to seniors in the region by mail with a mail-in feedback option.

Conclusions

The research conducted evaluated the need for a virtual nutrition education program for older adults within communities across the Northeast Tennessee region. The results from the survey showed that a majority of these older adults would be interested in participating in such a program. Additionally, the results show that some adjustments may need to be made to the proposed program in order to reach as many older adults as possible. While many participants reported feeling comfortable with technology use, there was still a significant number of participants that were not. Making an accommodation to offer an in-person option, or even a virtual option at the senior centers where assistance could available, would benefit these individuals to ensure that those that wish to participate will have as few barriers as possible. This study adds to the overall knowledge of how the older population is adapting to a more virtual world, and provides insights as to how to implement a virtual education program designed for a generation that may be unfamiliar with technology-driven educational programs.

References

Bell C., Fausset C., Farmer S., Nguyen J., Harley L., and Fain B. W.

2013. Examining social media use among older adults. In Proceedings of the 24th ACM Conference on Hypertext and Social Media (HT '13). Association for Computing Machinery, New York, NY, USA, 158–163. DOI:https://doi.org/10.1145/2481492.2481509

Chambers, D. H., Mary, M. H., Roeger, C., & Allison, A. A. (2004). Nutrition education displays for young adults and older adults. Health Education, 104(1), 45-54. doi:http://dx.doi.org/10.1108/09654280410511789

Leist, A. K. (2013). Social media use of older adults: A mini-review. Gerontology, 59(4), 378-84. doi:http://dx.doi.org/10.1159/000346818

Madden, M. (2020, May 30). Older adults and social media. Pew Research Center: Internet, Science & Tech. Retrieved October 6, 2021, from https://www.pewresearch.org/internet/2010/08/27/older-adults-and-social-media/.

Appendix A

EAST TENNESSEE STATE UNIVERSITY

Office for the Protection of Human Research Subjects Box 70565 Johnson City, Tennessee 37614-1707
Phone: (423) 439-6053

Initial External IRB Registration Letter

February 22, 2022

Whitney Bignell, PhD
Health Sciences

RE: Socially Nutritious: Addressing Food Insecurity Among Older Adults in Northeast Tennessee
IRB#: c1221.1
Sponsor: Other Funding

The following items have been received and reviewed for this external reliance protocol:

- Request to Rely xForm; Protocol; External IRB Approval Letter; Consent Form v1; Signed IAA; Grant; Interview Questions

The review and approval performed by the designated IRB, University of Tennessee, for the protocol c1221.1 was accepted on February 21, 2022. The External IRB Registration for this study expires on December 6, 2022. This External IRB registration will be reported to the convened IRB at the next meeting.

Please note the following PI Responsibilities:

1. Provide ETSU with the required documents from the reviewing IRB, which include the approval letter from the external IRB, the approved protocol, the approved informed consent, the grant (if applicable), relevant Investigator's Brochure (if applicable), participant documents (i.e., advertisements, surveys, questionnaires, phone scripts), documentation of approved waiver, documentation regarding HIPAA, and any other documentation reviewed by the external IRB in the approval determination.
2. Disclose financial conflicts of interest according to the agreed upon process and complying with any conflict management plans that may result.
3. Ensure that other ancillary reviews (e.g., Biosafety) required by ETSU are obtained and provided to the reviewing IRB in accordance with their policies.

4. Ensure that no individuals will be enrolled in research prior to review and approval by the Airband receipt of the registration documents from ETSU and receipt of any other required institutional approvals, including institutional approval for Ballad Health studies.
5. Cooperate with the reviewing IRB's responsibility for initial and continuing review, recordkeeping, and reporting. Submit all information requested by the reviewing IRB in a timely manner. When responsible for enrolling participants, obtain, document, and maintain documentation of informed consent for each participant, or each participant's legally authorized representative, using the process approved by the reviewing IRB.
6. Submit copies of results of the external IRB review of amendments or other approvals to ETSU within 10 days of receipt. Required documents for modifications are: the proposed amendment, the IRB approval letter, IRB-approved protocol, informed consent document, and any other relevant documents.
7. Report non-compliance, participant complaints, protocol deviations, or other events, including UPIRTSOs, according to the requirements specified in the reliance agreement. Submit any UPIRTSOs that involve ETSU research participants or personnel to ETSU within 10 days. In addition, the results of the external IRB's review must be submitted to ETSU within 10 days of receipt.
8. Submit copies of monitoring reports to ETSU within 10 days of receipt.
9. Submit the reviewing IRB continuing review approval letter, the final approved protocol and informed consent, the progress report, and any other documents reviewed by the external IRB and any monitoring reports not previously submitted to ETSU in a timely manner.
10. At study closure, submit a copy of the final report provided to the external IRB and the closure approval letter from the external IRB to ETSU.
11. Maintain research study documentation in accordance with ETSU Policy and retain the records for a period of six years after the calendar year in which the study is closed.

Research which involves veteran populations, or is otherwise supported by VA resources, must be reviewed and approved by the VA Research and Development Committee.

A copy of the executed IRB Authorization Agreement is included with this registration letter.

Sincerely,

Nicholas Hagemeier, PhD
Interim Vice Provost for Research

East Tennessee State University

Enclosure

Cc: University of Tennessee

Appendix B

Consent for Research Participation

Research Study Title: Socially Nutritious: Addressing Food Insecurity Among Older Adults in Northeast Tennessee

Researcher(s): Karen Franck, University of Tennessee, Knoxville
Kristen Johnson, University of Tennessee, Knoxville
Whitney Bignell, East Tennessee State University, Johnson City

We are asking you to be in this research study because you are an older adult living in Tennessee. You must be age 18 or older to participate in the study. The information in this consent form is to help you decide if you want to be in this research study. Please take your time reading this form and contact the researcher to ask questions if there is anything you do not understand.

Why is the research being done?

The purpose of the research study is to identify nutrition education needs and challenges older adults face participating in online nutrition education programs.

This study is being conducted by researchers at the University of Tennessee, Knoxville and researchers at East Tennessee State University.

The researcher/research team and the University of Tennessee, Knoxville is receiving funding from the U.S. Department of Health and Human Services.

What will I do in this study?

If you agree to be in this study, you will complete an online survey. The survey includes questions about challenges older adults face using technology and nutrition education needs. The survey should take you about 15 minutes to complete. You can skip questions that you do not want to answer.

Can I say "No"?

Being in this study is up to you. You can stop up until you submit the survey. After you submit the survey, we cannot remove your responses because we will not know which responses came from you.

Are there any risks to me?

We don't know of any risks to you from being in the study that are greater than the risks you encounter in everyday life.

Are there any benefits to me?

We do not expect you to benefit from being in this study. Your participation may help us to learn more about online nutrition education program needs for older adults. We hope the knowledge gained from this study will benefit others in the future.

IRB NUMBER: UTK IRB-21-06674-XP IRB
APPROVAL DATE: 12/07/2021
IRB EXPIRATION DATE: 12/06/2022

What will happen with the information collected for this study?

The survey is anonymous, and no one will be able to link your responses back to you. Your responses to the survey will not be linked to your computer, email address or other electronic identifiers. Please do not include your name or other information that could be used to identify you in your survey responses. Information provided in this survey can only be kept as secure as any other online communication.

Information collected for this study will be published and possibly presented at scientific meetings.

Who can answer my questions about this research study?

If you have questions or concerns about this study, or have experienced a research related problem or injury, contact the researcher, Karen Franck at **kfranck@utk.edu** or 865-974-1448.

For questions or concerns about your rights or to speak with someone other than the research team about the study, please contact:

Institutional Review Board
The University of Tennessee, Knoxville
1534 White Avenue
Blount Hall, Room 408
Knoxville, TN 37996-1529
Phone: 865-974-7697
Email: utkirb@utk.edu

Statement of Consent

I have read this form, been given the chance to ask questions and have my questions answered. If I have more questions, I have been told who to contact. By selecting "I Agree" below, I am providing my signature by electronic means and agree to be in this study. I can print or save a copy of this consent information for future reference. If I do not want to be in this study, I can select "I Do Not Agree" to exit out of the survey.

o I agree to participate o I do

not agree to participate

IRB NUMBER: UTK IRB-21-06674-XP IRB
APPROVAL DATE: 12/07/2021
IRB EXPIRATION DATE: 12/06/2022

Please select the answer that fits best for you.

1. Where do you access the internet? (Check all that apply)
    a. My home
    b. Library
    c. Senior Center
    d. Friend or relatives home
    e. I do not access the internet
    f. Other location (please specify)

2. Which of the following devices do you use to access the internet? (check all that apply)
    a. Computer
    b. Smart phone
    c. Tablet
    d. Other

3. How frequently do you use email?
    a. Every day
    b. 3-4 times each week
    c. 1-2 times each week
    d. Less than once per week
    e. I do not have a personal email address.

4. What is your comfort level using technology, such as Zoom or telemedicine, for educational purposes?
    a. I do not use technology-based education
    b. Not comfortable at all
    c. Somewhat comfortable
    d. Comfortable
    e. Very comfortable

5. Which of the following social media platforms do you use? (Choose all that apply) a. Facebook
    b. Instagram
    c. LinkedIn
    d. Pinterest
    e. Snapchat
    f. Twitter

g. YouTube
h. TikTok
i. I do not follow any social media platforms.

6. Which of the following resources do you use to learn about nutrition and wellness?
7. Would you be interested in attending a class to learn more about nutrition, wellness, and physical activity?
    a. Yes
    b. I'm not sure
    c. No – Go to Question #10 (learning about available programs)

8. Which of the following class formats would you most prefer? (1 is most preferred, 5 is least preferred). (radio buttons – rank)
    a. In-person group session
    b. Online group session
    c. Online videos that you access on your own
    d. Telephone group session

9. Please indicate our interest in the following nutrition topics? (scale from Very Interested
   – Not Interested at all)
    a. General healthy diet
    b. Fad diets
    c. Healthy eating on a budget
    d. Heart-healthy diets
    e. Foods and mental health or cognitive health
    f. Protein
    g. Dietary supplements
    h. Food safety
    i. Healthy eating on the go
    j. Cooking for one or two
    k. Making recipes healthier
    l. Other: _____

Section 2: Current Food Practices

The following questions help us understand your current food practices, such as preparing meals and grocery shopping, food security.

10. How close is your nearest grocery store to your house?
    a. Less than 10 minutes
    b. 10 – 30 minutes
    c. More than 30 minutes

11. Which of the following locations best describes where you buy the majority of your food?
    a. Convenience store (i.e., Gas station, Shell Station, Weigels)
    b. Dollar stores (i.e., Dollar General, Dollar Tree, Family Dollar)
    c. Food Co-op
    d. Grocery store (i.e., Kroger, Food Lion, Publix, Food City, Ingles)
    e. Grocery superstores (i.e., Walmart, Target)
    f. I eat out (restaurants or fast food)
    g. Other: _____

12. How frequently do you eat meals at your local senior center?
    a. 3-5 days each week
    b. 1-2 days each week
    c. Less than 1 day each week (i.e., may go a few days each month)
    d. I do not eat meals at my local senior center

13. Which of the following kitchen appliances do you have in your home? (Check all that apply)
    a. Range (stove/oven)
    b. Oven only
    c. Hot plate or electric skillet
    d. Toaster
    e. Toaster-oven
    f. Refrigerator/freezer combination
    g. Refrigerator only
    h. Freezer only
    i. Blender
    j. Stand Mixer
    k. Hand Mixer

l. Slow cooker (Crockpot) or Electric Multi-cooker (Instant Pot) m. Grill
n. Air-fryer
o. Microwave

14. Which statement **best** describes your ability to prepare meals on most days?
    a. I can plan, prepare, and serve nutritious meals on my own.
    b. I can prepare adequate meals but need assistance getting ingredients.
    c. I can only heat and serve my meals.
    d. I can plan, prepare, and serve my meals on my own but I do not maintain a nutritious diet.
    e. I can plan and prepare my meals on my own but choose not to. I prefer frozen meals or eating out.
    f. I need assistance from others to plan, prepare and serve my meals.
15. Do you have reliable help with meal preparation?
    a. Yes
    b. No
    c. I do not need help with meal preparation
16. Do you have reliable help with shopping for food?
    a. Yes
    b. No
    c. I do not need help with shopping for food.
17. Do you follow any special dietary restrictions or meal plans? (Mark all that apply) a. Dairy-free
    b. DASH diet
    c. Diabetes or consistent carbohydrate diet
    d. Gluten-free
    e. Heart healthy diet (i.e., low fat, low cholesterol, low sodium)
    f. Other (please list) _____
18. How willing are you to make changes to your eating habits in order to be healthier? (Scale: 1 Very willing to 5 Not at all willing)
19. How many meals do you eat each day?
    a. 3 or more meals and snacks
    b. 2 meals or snacks
    c. 1 meal or snack
    d. Less than 1 meal or snack
20. In the past 12 months, have you or a household member, used any of the following resources to receive food items? Select all that apply.

a. Commodity Supplemental Food Program
b. Congregate Meal Program (Senior lunch program)
c. Family/friends
d. Food pantries/food banks
e. Meals on Wheels/Home-delivered meals
f. Faith-based organization (church, synagogue, etc.)
g. Supplemental Nutrition Assistance Program (i.e., food stamps, food assistance, SNAP)
h. Other community food and nutrition programs (please list):

21. During the last 30 days, how often was this statement true: The food that we bought just didn't last, and we didn't have money to get more.
    a. Often
    b. Sometimes
    c. Never
22. During the last 30 days, how often was this statement true: We couldn't afford to eat balanced meals.
    a. Often
    b. Sometimes
    c. Never
23. In the past 30 days, did you or other adults in your household ever cut the size of your meals because there wasn't enough money for food?
    a. Yes, on 3 or more days
    b. Yes, on 1 or 2 days
    c. No

24. In the past 30 days, did you or other adults in your household ever skip meals because there wasn't enough money for food?
    a. Yes, on 3 or more days
    b. Yes, on 1 or 2 days
    c. No
25. In the last 30 days, did you ever eat less than you felt you should because there wasn't enough money to buy food?
    a. Yes
    b. No

26. In the last 30 days, were you ever hungry but didn't eat because you couldn't afford enough food?
    a. Yes
    b. No

Section 3: General Health and Nutrition Risk

The following questions help us better understand any health conditions that may impact your nutrition or ability to eat certain foods.

27. In general, how would you describe your health?
    a. Very poor
    b. Somewhat poor
    c. Average
    d. Somewhat good
    e. Very good
28. Has a doctor, nurse, or other health professional ever told you that you have any of the following? Check all that apply
    a. I have no medical conditions
    b. Chest pain (angina) or coronary artery disease
    c. Arthritis
    d. Depression
    e. Diabetes
    f. Food allergies
    g. High blood pressure
    h. High cholesterol
    i. History of cancer or current cancer diagnosis
    j. Kidney disease
    k. Lung disease (i.e., asthma, chronic obstructive pulmonary disease or COPD, emphysema, or chronic bronchitis)
    l. Heart attack (myocardial infarction)
    m. Oral health or mouth problems
    n. Osteoporosis
    o. Stroke
    p. Other (please list):

29. Have you been eating poorly because of a decreased appetite?
    a. No
    b. Yes
30. How many minutes each day are you physically active? (i.e., walking, light housework, planned exercise, etc.)
    a. 0 – 30 minutes
    b. 31 – 60 minutes
    c. More than 60 minutes
    d. I am not able to engage in physical activity
31. How often do you engage in social activities? (i.e., senior or community center activities; church or faith-based organization activities; meeting with friends; taking classes; etc.)
    a. 3 or more times each week
    b. 1 – 2 times each week
    c. 2 – 3 times each month
    d. 1 time or less each month

Section 4: Demographics

The following questions help us understand more about the diversity of the participants in this survey and will help us develop future programs to meet your needs. We would appreciate if you would answer a few questions about yourself. All of this information will be kept confidential.

32. To which gender identity do you most identify?
    a. Female
    b. Male
    c. Transgender female
    d. Transgender male
    e. Gender variant/non-conforming
    f. Not Listed: _____
    g. Prefer not to answer
33. What is your age? _____ years34. What is your highest education level?
    a. Less than high school diploma
    b. High school diploma

c. Some college, including associate degree

d. Bachelor's degree

e. Some post-graduate work or advanced degree 35. Are you Spanish, Hispanic, or Latino? a. Yes

b. No

36. What is your race? (Select all that apply)

a. American Indian or Alaskan Native
b. Asian
c. Black or African-American
d. White/Caucasian
e. Native Hawaiian/Other Pacific Islander
f. Other Race: _____ 37. What is your marital status?

a. Divorced
b. Never married
c. Currently married
d. Separated
e. Widowed

38. In which county do you live? (Dropdown of Tennessee Counties)
39. Where is your home located? Would you say . . .
    a. In a city
    b. In a rural area
    c. In a suburban area
40. Who lives in your household with you (Check all that apply).
    a. Your spouse
    b. Your domestic partner
    c. Your children
    d. Your grandchildren
    e. Other relatives
    f. Other non-relatives than a domestic partner
    g. I live by myself.
41. How many people live in your household, including yourself?
    a. 1
    b. 2
    c. 3
    d. 4
    e. 5
    f. 6
    g. 7
    h. 8 or more
42. How many children currently reside in your household (under age 18)?
    a. 0
    b. 1

c. 2
d. 3
e. 4
f. 5 or more

43. Are you the primary caregiver for your grandchildren or other relatives?
    a. Yes
    b. No
44. What was your total annual household income for 2021? Include income from all sources for all persons in your household such as income from jobs, Social Security, retirement income, public assistance, and all other sources.
    a. At or below $20,000 ($1,666 per month or less)
    b. $20,001 - $25,000 ($1,667 - $2,083 per month)
    c. $25,001 - $30,000 ($2,084 to $2,500 per month)
    d. $30,001 - $35,000 ($2,501 to $2,917 per month)
    e. $35,001 - $40,000 ($2,918 to $3,333 per month)
    f. $40,001 - $50,000 ($3,334 to $4,167 per month)
    g. Over $50,000 ($4,168 per month or more)

Thank you so much for completing this survey!

Appendix C

Disclaimer: This project was supported, in part by grant number 90INNU0031 from the Administration for Community Living, U.S. Department of Health and Human Services, Washington, D.C. 20201. Grantees undertaking projects with government sponsorship are encouraged to express freely their findings and conclusions. Points of view or opinions do not, therefore, necessarily represent official ACL policy.