ageWELL KY: A Replication Study

Report submitted to the National Foundation to End Senior Hunger

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The analyses, conclusions, and opinions are solely the authors' and do not represent the sponsor's opinions.

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Finally, we wish to acknowledge the RICH Heart Team research assistants and the undergraduate and graduate nursing students from the UK College of Nursing who assisted with the recruitment and measurement of the meal program participants.

1. Overview: ageWELL Program

The ageWELL KY study conducted in eastern Kentucky (2023-2024) was a *replication study* that followed the successful implementation of the ageWELL DC *proof of concept study* conducted in Washington DC (2022-2023). P*roof-of-concept studies* evaluate feasibility, acceptability and potential of a program (ageWELL) to improve outcomes of interest in a specific population. For ageWELL, the population is older adults who access the congregate meal program. A *replication study* uses the same methods to evaluate the program, but in a new location and with different study participants.

The ageWELL studies included two components: 1) program delivery of the ageWELL health program to an older adult population and 2) program evaluation of participants.

Program Delivery:

The ageWELL program used an academic practice partnership model and collaboration between local schools of nursing and community-located sites providing the federally-supported congregate meal program to bring health programs to adults aged 60 years and older '*where they live*.'

Faculty-supervised, prelicensure nursing students (undergraduate students studying to be nurses) visited selected sites once weekly for a pre-set number of weeks to engage older adults in a variety of health-related topics one-on-one and in group settings, with the goal of improving health and wellbeing and self-management of common chronic disease conditions.

At both study locations, six sites were selected to participate, with a subset of sites randomly selected to receive the ageWELL program.

Program Evaluation:

Congregate meal program participants across all sites were invited to take part in evaluation activities that included measuring blood pressure, height, and weight and completing a health survey, before (baseline) and after (follow-up) delivery of the ageWELL program. This approach allowed researchers to compare outcomes for older adults participating in ageWELL (*treatment group*) to older adults who did not (*usual program group*). The treatment group also completed a brief survey assessing their satisfaction with the ageWELL program.

Nursing students completed an evaluation assessing their participation and satisfaction with delivering the ageWELL program at the community-located sites. We also assessed *service counts* (record of contact between the nursing students and older adult participants), categorized by type of activity provided.

Details of the Kentucky study, including a description of the participants, program information and study outcomes follow.

2. Overview: Academic practice partnership

The ageWELL KY program replicated the academic practice partnership model used in the DC study. DAIL staff identified and confirmed interest in study participation from three Area Agencies on Aging (AAA), who then identified six senior centers located in their service areas in Eastern Kentucky who also agreed to study participation. For delivery of the ageWELL program, senior centers were partnered with local nursing schools, which included the University of Kentucky and Morehead State University.

Meal program participants from all senior centers were invited to participate in data collection that included height, weight and blood pressure and completion of a survey. Data collection occurred at the beginning of the study (baseline) and again following delivery of the ageWELL program (follow-up). The UK College of Nursing research team was responsible for all data collection.

Similar to the DC study, the KY replication study used a two-group design. Three senior centers were randomly assigned to continue usual programming and three centers to supplement usual programming with the ageWELL program. With random assignment, there is an equal chance of being placed in one of the two groups. This positioned us to compare health outcomes (i.e. blood pressure) between the two groups. Random assignment occurred within pairs of senior centers matched by geographic similarity. We used a modified Rural-Urban Commuting Area (RUCA) codes classification to designate pairs as rural, semi-rural and more urban. See Table 1, page 5.

The primary funding for the ageWELL KY study was made to George Mason University in Fairfax, VA, with principal investigator (PI), Dr. Martha Kubik, who was also the PI of the DC study. A subaward was made to the University of Kentucky College of Nursing, with Dr. Martha Biddle as the site PI. The UK Institutional Review Board approved the research study for ethical compliance.

3. Selection of senior centers

Eligibility criteria for senior centers were developed in consultation with DAIL staff familiar with sites and operations. Eligible centers were required to be located within a 60-minute driving radius of UK Lexington campus where the measurement team were located, have ≥ 20 registered meal program participants as of September 2023, and be open ≥4 hours/day 5 days/week. Geographic diversity was also a criteria (see above).

DAIL staff identified AAAs with service areas that included eligible senior centers and assessed interest in study participation. Confirmation of interest was then followed by a general meeting that included DAIL staff, NFESH directors, AAA directors, senior center managers and the research team to review study protocols and procedures.

See Table 1, page 5 for the participating AAAs and senior centers.

Table 1. Area Agencies on Aging and senior centers, ageWELL KY, 2023-2024

AAA	Senior Center	Location	Address
Buffalo Trace Area Development District	**Brooksville** Senior Center (Bracken County)	Rural	110 Grandview Drive, Brooksville, KY, 41004
Buffalo Trace Area Development District	**Flemingsburg** (Fleming County Senior Center)		108 East Locust Street, Mt. Sterling, KY, 40353
Bluegrass Area Development District	**Paris** (Bourbon County Senior Center)	Semi- Rural	11 Legion Road, Paris, KY, 40361
Gateway Area Development District	**Mt. Sterling** (Montgomery County Senior Center)		108 East Locust Street, Mt. Sterling, KY, 40353
Bluegrass Area Development District	**Berea** Senior Center (Madison County)	More Urban	214 West Jefferson Street, Berea, KY, 40403
Bluegrass Area Development District	**Richmond** Active Living Center (Madison County)		801 Brighton Avenue, Richmond, KY, 40475

4. Recruitment and measurement of meal program participants

Meal program participants at each senior center were invited to participate in measurement. Eligibility criteria included the participant be ≥ 60 years old, a registered meal program participant and speak English. Funding limits precluded the cost of translators and translation of materials to languages other than English. Dr Biddle supervised all participant recruitment activities in coordination with senior center and AAA staff. Advertisement flyers describing the measurement process, eligibility criteria, and measurement dates were posted at senior centers and distributed to meal program participants in advance of measurement. Two to four measurement visits were made to a senior center depending on interest and participant's availability.

The first (baseline) measurement occurred in fall 2023 (October 24th – December 13th, 2023). Eligible and interested participants provided written informed consent. Participants who completed the measurement received a $20 gift card as a thank-you for their time. Across the six sites, 177 meal program participants were measured. The second (follow-up) measurement occurred in spring 2024 (March 18 – April 24th, 2024). Only persons who participated at baseline were eligible to participate at follow-up. Participants received a $30 gift card as a thank you for their time at the follow-up visit. Across the six sites, 155 participants were measured at follow-up. The overall retention rate for the replication study was 87%. See Table 2, page 6, for details by site.

Table 2. Measurement participation and retention rates, ageWELL KY Study, 2023-2024

Senior Center	Location	Baseline (Fall 2023)	Follow Up (Spring 2024)	Retention Rate
Brooksville Senior Center	Rural	22	20	91%
Flemingsburg Fleming County Senior Center		53	44	83%
Paris Bourbon County Senior Center	Semi-Rural	16	15	94%
Mt. Sterling Montgomery County Senior Center		30	26	87%
Berea Senior Center	More Urban	26	25	96%
Richmond Active Living Center		30	24	80%
Grand Total		**177**	**154**	**87%**

Research staff conducting measurement were from the UK College of Nursing. All staff completed the Collaborative Institutional Training Initiative (CITI) Program for human subjects for social-behavioral-educational researchers and training on ageWELL measurement procedures and protocols. Two-person teams included the Site PI or the PhD RN student and a research assistant or an undergraduate nursing student

5. ageWELL KY measurement sample

To better understand the representativeness of the ageWELL KY measurement sample or how similar they are to other older adult samples in Kentucky and nationwide, we begin here with a brief overview of state level data from 2021-2022 that describe Kentucky's older adult population. In other subsections, we compare the ageWELL sample to a nationwide sample of congregate meal program users collected in 2017 as part of an evaluation of the Title III-C Nutrition Services Program (NSP).

5a. Older adult population in Kentucky

In Kentucky, 18% of the state population was age 65 and older at the time of the 2020 census, an increase from 13% in 2010 (1). In 2020, the majority of older adults in Kentucky were female (55%), identified as Non-Hispanic White (91%), 22% were college graduates, and 13% reported living below the poverty line (1).

According to the United Health Foundation, America's Health Rankings, 2024 Senior Report, Kentucky is among the least healthy states for older adults, ranking 47 of 50 (1) The main challenges faced by older adults in Kentucky are a high prevalence of multiple

chronic conditions, high early death rate (occurring between ages 64 to 74 years), a high poverty rate and high prevalence of smoking (1).

5b. Demographic characteristics: ageWELL sample

Table 3 includes a comparison of the KY sample to an older adult congregate meal program sample collected as part of a national evaluation of the Title III-C Nutrition Services Program (NSP), conducted in 2017.

Compared to the NSP sample, the ageWELL KY participants were younger and mostly white race, female, with a high school education. Veterans were a larger proportion of the NSP sample. The percentage of both samples living alone and having health insurance were similar.

Table 3. Demographic characteristics, ageWELL KY sample, Fall 2023 and Title III-C Nutrition Services Program (NSP) sample, 2017

	ageWELL N=177	**NSP N= 596**
Age, years Mean	75	77
Age category, years		
≤ 70	35%	22%
71-74	14%	19%
75-84	38%	41%
≥ 85	13%	18%
Race		
White	91%	76%
Black	6%	15%
Asian	1%	5%
American Indian/Alaskan Native	2%	4%
> one race/not specified	1%	--
Ethnicity		
Non-Hispanic	98%	89%
Hispanic	2%	11%
Sex		
Female	80%	67%
Male	20%	33%
Education Level		
≤ High School	72%	54%
Any college/trade school	28%	46%
Lives alone	59%	60%
Ever served in active duty	8%	17%
Has health insurance	99%	99%

N = Sample Size

Our survey also assessed transportation used by meal program participants to access senior centers. Most (68%) used a private vehicle they drove;19% used community buses; 7% public transportation; 6% a private vehicle driven by others; and 1% walked. Almost all (94%) indicated transportation did not limit attendance at the senior center.

5c. Measured health outcomes: ageWELL sample

High blood pressure and obesity are common in older adulthood (1). Awareness of prevalence of these conditions among the population of older adults who access the congregate meal program can aid efforts to support better self-management.

The most common type of high blood pressure in older adulthood is isolated systolic hypertension, defined as systolic (top number) blood pressure 130 mm Hg or higher and diastolic (bottom number) blood pressure less than 80 mm Hg (2). Measured BP results were consistent with isolated systolic hypertension and suggest many are managing their blood pressure. However, nearly half (47%) would benefit from improved control. See Table 4.

Table 4. Blood Pressure, Body Mass Index, ageWELL KY participants, Fall 2023

Blood Pressure (BP)	**N=177**	
Systolic BP mm Hg	M (SD)	130 (16)
Systolic BP, by category	Normal < 120	29%
	Elevated 120-129	23%
	Stage 1 130-139	25%
	Stage 2 ≥ 140	22%
Diastolic BP mm Hg	M(SD)	76 (11)
Diastolic BP, by category	Normal < 80	60%
	Stage 1 80-89	28%
	Stage 2 ≥ 90	12%
Body Mass Index (BMI)		
BMI kg/m^2	M(SD)	31 (7.5)
BMI, by category	Underweight < 18.5	1%
	Normal 18.5 to < 25	16%
	Overweight 25 to < 30	31%
	Obese 30 to < 40	41%
	Severe Obesity ≥ 40	11%

M(SD) = Mean (Standard Deviation); mm Hg (millimeters of mercury)

Among the ageWELL KY sample, more than half (52%) had obesity, with 11% severely obese. State-level obesity prevalence among adults age 65 years and older is 34% (1), suggesting the older adults who access the congregate meal program are at an increased risk for obesity and associated poor health outcomes, such as high blood pressure. See Table 4.

5d. Self-reported health outcomes: ageWELL sample

Nationwide, cardiovascular disease (heart attack and stroke) is the leading cause of death in older adults (3). Risk factors include hypertension, high cholesterol and diabetes. In Kentucky, state level prevalence estimates for older adults with hypertension, high cholesterol and diabetes are 64%, 51%, and 28%, respectively (1), which are consistent with both the ageWELL and NSP sample rates. See Table 5.

Table 5 Self-reported Health Outcomes, ageWELL KY participants, Fall 2023

	ageWELL N=177	**NSP N= 598**
Chronic Medical Conditions		
High Blood Pressure	65%	70%
Arthritis	65%	60%
High Cholesterol	55%	57%
Diabetes	29%	33%
Asthma/COPD	30%	39%
Heart Disease	30%	35%
Depression	34%	---
Cancer	19%	20%
Stroke	8%	10%
Kidney Disease	9%	11%
Number of chronic medical conditions		
0-1	15%	Not reported
2-3	41%	
≥ 4	44%	
Prescription Medications		
0	7%	11%
1-2	15%	21%
3-5	34%	39%
≥ 6	44%	29%
ER visit in the last 3 months.		
None	82%	Not reported
≥ one visit	18%	
Loneliness		
Yes	17%	Not reported
Self-rated health		
Excellent	4%	13%
Very good	17%	27%
Good	47%	37%
Fair	26%	19%
Poor	6%	4%

N = Sample Size

Among the ageWELL sample, 85% reported multiple chronic conditions, defined as ≥ two conditions, exceeding the 68% rate reported by a national sample of Medicare beneficiaries (3). Polypharmacy, defined as taking three or more medications daily, was also common, reported by 78% of the sample compared to 68% of the NSP sample. Nearly half of the ageWELL sample (44%) reported taking six or more medications daily

It is particularly notable that 34% of the ageWELL sample reported being told by a health professional they had depression. This compares to a national prevalence rate of 16% and a state-level rate of 19% (1). Nationwide, Kentucky ranks fourth for prevalence of depression among adults age 65 years and older (1).

> **Disproportionate Burden**: Prevalence of depression was significantly higher among participants at the rural (41%) and more urban (44%) centers than participants at the semi-rural (18%) centers. The p value was 0.007.

Self-rated health differed across the ageWELL and NSP samples, with rates of reporting fair to poor health, 36% and 23%, respectively. Nationally, 25% of older adults report fair to poor health status (4). Self-rated health is recognized as a valid and reliable predictor of morbidity, mortality and functional status.

5e. Self-reported health behaviors: ageWELL sample

Lifestyle practices that include diet, physical activity and tobacco use contribute to the prevention and management of many chronic conditions. Across the sample, one-half reported aerobic activity levels consistent with CDC recommendations for older adults, with 30% engaging in strengthening activities and 48% in flexibility activities once a week or more. Only 8% met the '5 a day' fruit and vegetable recommendation, with more consuming fruits than vegetables. This compares to 7% nationwide (1).

Table 6. Self-reported health behaviors, ageWELL KY, Fall 2024

Behavior	N = 177
Fruit & Vegetable Intake: past 30 days	
≥ 2 fruits/day	25%
≥ 3 vegetables/day	10%
≥ 5 fruits & vegetables/day	8%
Physical Activity: every week	
Aerobic activity: Meets recommendation *	50%
Strengthening activity: Meets recommendation **	30%
Flexibility activity: Meets recommendation **	48%
Tobacco Use	
Current Smoker: Yes	9%
Ever Smoker: Yes	47%

N = Sample size

* ≥ 30 minutes/day moderate physical activity, ≥ 5 days/week and/or ≥ 20 minutes/day vigorous physical activity, ≥ 3 days/week ; ** ≥ once a week

The current smoking rate among ageWELL participants of 9% is similar to nationwide prevalence and lower than state-level prevalence of 12% (1). The current smokers were mostly at the rural sites, with a few at the more urban centers. There were no current smokers at the semi-rural sites.

Veggie Meter® Results

The Veggie Meter ® is a portable instrument that provides a noninvasive, objective measurement of fruit and vegetable consumption in the past 30-90 days (5). A score of '200' is the average score of the U.S. general population. The average score for the ageWELL sample was 148, which is consistent with the low intake of fruits and vegetables self-reported by participants.

> **Disproportionate Burden:** Veggie meter scores were significantly lower for participants from more urban (score=114) and rural (score=149) centers compared to participants from the semi-rural sites (score=174), with the latter nearing the population average. The p value was < 0.007.

6e. Food-related outcomes

Prevalence of food-related outcomes were compared at baseline (Fall 2023) and six months later at follow up (Spring 2024). Outcomes included assessment of food security, frequency of eating meals at the senior center, satisfaction with the meal program, and participation in nutrition assistance programs. See Table 7 on page 12.

Food Security. Food security was assessed using the six-item Short Form of the U.S. Household Food Security Survey (6). The portion of the ageWELL sample that was food insecure was stable over the six-month period at 11%. However, the percent with very low food security increased from 1% at baseline to 4% at follow-up. Using 2021 data, nationwide prevalence of food insecurity among adults age 60 and older was 7%, which included 2.7% experiencing very low food security (7). In Kentucky, rates of food insecurity were also 7% but very low food security was higher at 3.4% (7).

Congregate Meal Program. Across the two timepoints, most (60%) of the sample reported eating 2-3 meals per week at the dining site. A similar percentage rated meals as 'very good' or 'good' at both timepoints. Almost all (94%) indicated they would recommend the meal program to others

Nutrition Assistance Programs. Over the six-month period, about half of the sample did not participate in any nutrition assistance programs. The Food Pantry/Food Bank and the Senior Farmers Market Nutrition Program were the most popular, used by 29% and 25% at baseline and 25% and 21% at follow up, respectively. Fewer than 20% participated in the Supplemental Nutrition Assistance Program (SNAP) or Food Commodity Supplemental Food Program. There was little change in participation in food programs over the six-month period.

Table 7. Food-related outcomes, ageWELL Pilot Study, Fall 2023 and Spring 2024

	Fall, 2023	**Spring, 2024**
Food Secure	(n=157)	(n=135)
Yes	89%	89%
Food Insecure	(n=20)	(n=12)
Low food security	10%	7%
Very low food security	1%	4%
	(n=175)	(n=154)
In usual week, number of days eating a meal at senior center		
1 day	14%	14%
2 days	24%	21%
3 days	38%	40%
4 days	11%	10%
5 days	12%	16%
In last 3 months, frequency of eating a meal at senior center:		
More often	10%	4%
Less often	10%	4%
About same	78%	92%
Rating of meal at senior center		
Excellent	11%	15%
Very good	30%	21%
Good	39%	40%
Fair	16%	21%
Poor	2%	3%
Would recommend meal program to others:		
Yes	94%	94%
No	6%	6%
Participation in each food assistance program: Yes		
Did not participate in any.	48%	51%
Supplemental Nutrition Assistance Program (SNAP)	16%	19%
Senior Farmers' Market Nutrition Program (SFMNP)	25%	21%
Commodity Supplemental Food Program (CSFP)	16%	19%
Food pantry/food bank	29%	25%
Child and Adult Care Food Program (CACFP)	0%	1%
Participation in multiple food programs		
None	49%	51%
1 program	28%	25%
2 programs	12%	15%
3 programs	10%	6%
4 programs	1%	3%

n = Sample Size. Totals may not = 100% due to rounding.

Disproportionate Burden. Participants from the rural and more urban centers were significantly more likely to report participation in the SNAP program, use of food banks and participation in ≥2 food programs compared to participants at semi-rural centers. The p values were < 0.001.

7. Feasibility of ageWELL program delivery

7a. Nursing school and senior center collaborations

Nursing school partners included the University of Kentucky College of Nursing and Morehead State University Department of Nursing, both accredited pre-licensure programs approved by the Kentucky Board of Nursing. Nursing administrators with both programs agreed to the placement of nursing students at a senior center during the spring 2024 semester as part of a community-based clinical experience.

Small groups of students were on-site for 4-5 hours once a week for 5-7 weeks and on a preassigned day. Nursing program faculty with a KY RN license and graduate degree in nursing were on-site to supervise students. See Table 8.

Each nursing school and Area Agency on Aging director signed a memorandum of understanding (MOU) that was approved by their respective institution/agency.

Table 8. Nursing school and senior center sites, Spring 2024

Senior Center	Nursing School	Nursing Program	Number of Weeks
Richmond Active Living Center	University of Kentucky	Bachelor of Science in Nursing	5 weeks
Paris Bourbon County Senior Center	University of Kentucky	Bachelor of Science in Nursing	7 weeks
Flemingsburg Fleming County Senior Center	Morehead State University	Bachelor of Science in Nursing	6 weeks

Prior to the ageWELL program start, in-person meetings were held at each senior center and included Dr. Biddle, the site manager, and the nursing faculty. Space for student-faculty conferences and one-on-one engagement with ageWELL program participants were identified. The process for faculty supervision of students was reviewed, as well as coordination of planned activities with senior center managers. The first day of each rotation included a student and faculty orientation led by Dr Biddle.

See Table 9, page 14.

Table 9. Nursing Student Orientation content, ageWELL KY Spring 2024

Project Information	Teaching Tools
ageWELL pilot study abstract	Motivational Interviewing
Overview Figure: ageWELL program components	Guidance to developing an Individual Health and Wellness Plan
Health Topics Menu Guide for Nursing Students	Key talking points: Prevention and Management of Hypertension
Management of Elevated Blood Pressure	Visual: Hypertension complications
Data Collection Form: Individual Activity Log	Nutrition Facts & Game Suggestions
Data Collection Form: Group Activity Lob	Nutrition Facts Game Directions

7b. Tailored and targeted ageWELL services.

Similar to the DC study, the primary aim of the ageWELL KY program was to improve self-management of health, wellness, and chronic disease conditions among program participants. The partnership between local nursing schools and Area Agencies on Aging brought nursing students to three senior centers to provide tailored (individual) and targeted (group) services to older adults, once a week for 5-7 weeks. Students provided nursing care under the supervision of an onsite nursing faculty. See Figure 1 for an overview of the program.

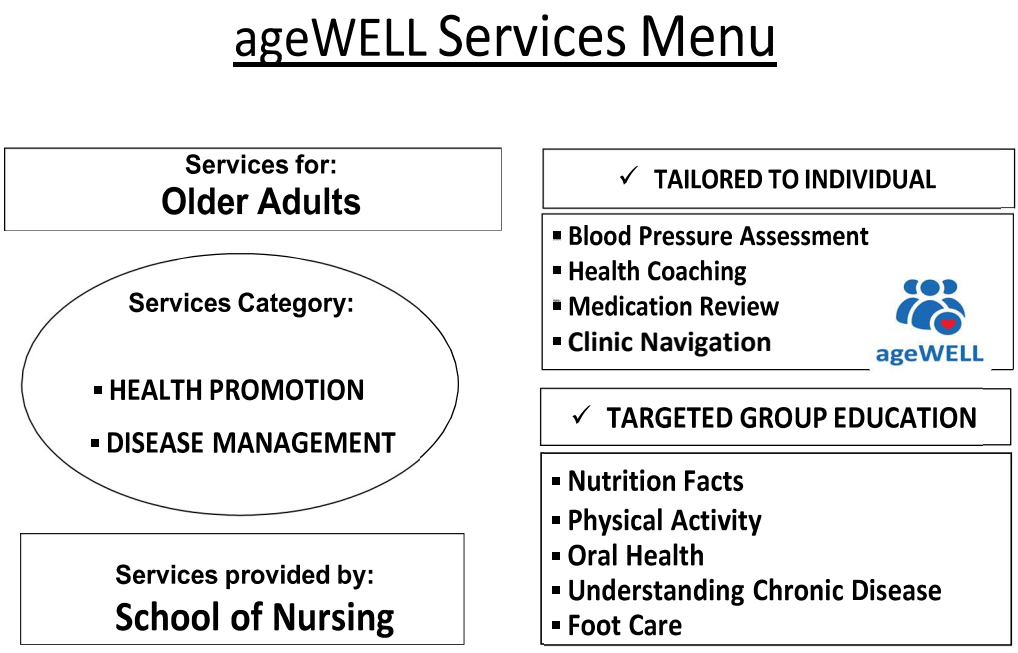

Figure 1. ageWELL program overview.

Tailored (individual) services were provided during one-on-one visits with a nursing student and a program participant. The visit included measuring blood pressure (BP) with documentation, review of results and health coaching based on the participants' priorities and goals. Common topics of interest included managing lifestyle practices (diet and physical activity) and medication use. Participants received a small spiral notebook and pen at their first one-on-one visit. They were encouraged to bring the notebook to each visit, for notetaking and to record and track BP readings. Frequency of one-on-one visits was determined by the program participant, with many visiting weekly.

Each nursing student kept a daily log of their one-on-one visits, by date, participant initials and type of tailored service provided. Logs were submitted to the onsite nursing faculty at days end, who scanned and emailed to research staff, who maintained and reviewed the logs.

Targeted group education services on a range of health topics were provided most weeks by the nursing students. Presentations were designed by the students to be informative and interactive. For example, labels from familiar food products were used to simulate at-the-grocery review of nutrition facts labels, with a focus on sodium, calories, and portion size. Complementing group education about physical activity, students invited participants to engage in chair yoga exercises. Small gift giveaways related to health topics were provided to encourage attendance. See Table 10.

Table 10. Group education topics and gift giveaways, Spring 2024

Health Topic	Gift/Raffle Giveaways
Spice It Up (Nutrition Education)	Gift: Measuring cups + vegetable scrubbers + dry erase boards
Portion Control	Gift: measuring cups Raffle: 12-piece food storage containers
Physical Activity Education	Gift: Pedometer + exercise bands + water bottles
Mouth Care Matters (Oral Health)	Gift: Toothbrush + toothpaste
Foot Care and Diabetes Management	Gift: Lotion + washcloths + nail files
Salt, You and High Blood Pressure	Gift: heart-shaped stress squeeze toy
Medication Planning	Gift: Pill organizers
Sleep Hygiene	Gift: Eye masks
Health Fair Topics with Nursing Students	Raffle: Stanley tumbler + puzzles

A Health Fair was held at the Paris, Bourbon County Senior site on the final day of the program. Nursing students staffed stations and shared information using poster boards, conducting one-on-one and group conversations with interested participants. Small gift giveaways/raffles at each station encouraged engagement. Across sites, 18 participants generated 43 service counts, with a breakdown of counts by topic as follows: cancer screening=2, foot and oral care=10, low sodium diet=2, vaccine education=4, fall risk=7, self-care=9, sleep hygiene=3 and medication adherence=6.

7c. Summary of services by type and reach (service counts)

Table 11 provides a summary by senior center and overall participants, by service type (tailored, targeted, health fair) and service counts (contact between participant and nursing student) for each ageWELL site. Across sites, a grand total of 1277 service counts were documented. A majority of the total service counts (80%) were tailored (individual) services, with blood pressure screening and health coaching the most popular. The health fair, a one-time, two-hour event, generated 18% of the total service counts at the Paris site. The total counts for Flemingsburg were noticeably higher than other sites due to more ageWELL participants at the site and on some days more nursing students.

Table 11. Summary of service counts, by site, type and total, ageWELL KY, Spring 2024

Activity	Richmond (5 days)	Paris (7 days)	Flemingsburg (6 days)	Grand Total
a. Tailored/ Individual	187	169	663	1019
Blood Pressure Screen	(67)	(44)	(288)	(399)
Health Coaching	(66)	(95)	(242)	(403)
Medication Review	(17)	(13)	(94)	(124)
Health Assessment	(17)	(3)	(39)	(59)
Foot Care	18	8	0	(26)
Clinic Navigation	(2)	(6)	0	(8)
b. Targeted/Group Education	43	34	138	215
c. Health Fair	0	43	0	43
Grand Total	**230**	**246**	**801**	**1277**

8. Acceptability of the ageWELL program to participants

8a. Meal program participants: participation and satisfaction

At the Spring 2024 follow-up measurement, meal program participants at the three senior centers that participated in the ageWELL program completed a brief survey to assess their participation in program activities and satisfaction with the program. Across the three sites, 75 of the 83 (90%) participants who completed measurement indicated they also participated in ageWELL program activities, providing the evaluation sample.

Across the three sites, blood pressure checks were the most common activity, reported by almost all (99%). Nutrition education (91%) and physical activity (79%) were also popular activities, followed by medication review (61%), vaccine education (47%) and foot care (41%). More than one-half (68%), reported participation in ageWELL activities every week and another 24% participated once or twice per month, with rates of both higher at the Paris and Flemingsburg centers compared to the Richmond center.

Table 12. Participation and helpfulness of program activities, meal program participants, total and by senior center, ageWELL KY Study, Spring 2024

	Total N = 75	Richmond n = 19	Paris n = 15	Flemingsburg n = 41
Participation in activity: Yes				
Blood pressure checks	99%	100%	93%	100%
Nutrition education	91%	89%	93%	90%
Physical activity education	79%	63%	100%	78%
Medication review	61%	58%	53%	66%
Vaccine education	47%	37%	53%	49%
Foot care education	41%	47%	40%	39%
Mouth care education	36%	32%	27%	41%
Clinic navigation	28%	32%	33%	24%
Frequency of participation				
Every week	68%	47%	79%	73%
2 x month	11%	11%	7%	12%
Once a month	13%	16%	7%	15%
< once a month	8%	26%	7%	0%
Helped to improve understanding of high blood pressure				
Very helpful	46%	27%	20%	64%
Helpful	30%	39%	33%	24%
Somewhat helpful	17%	17%	40%	10%
A little helpful	3%	0%	7%	2%
Not at all helpful	4%	17%	0%	0%
Helped to improve diet				
Very helpful	37%	32%	33%	42%
Helpful	40%	58%	40%	32%
Somewhat helpful	15%	5%	7%	22%
A little helpful	5%	5%	13%	2%
Not at all helpful	3%	0%	7%	2%
Helped to be more physically active				
Very helpful	41%	32%	26%	52%
Helpful	23%	31%	40%	12%
Somewhat helpful	23%	16%	27%	24%
A little helpful	8%	16%	7%	5%
Not at all helpful	5%	5%	0%	7%

N and n = Sample Size

On average, program participants indicated the ageWELL KY program was very helpful/ helpful in improving their understanding about high blood pressure (76%) and getting them to improve their diet (77%) and be more physically active (54%). See Table 12.

Almost all (99%) were very likely/likely to recommend friends participate in a program like ageWELL KY and were very satisfied/satisfied with their interactions with nursing students and with the ageWELL KY program overall. See Table 13.

Table 13. Participant satisfaction with ageWELL KY program, meal program participants, total and by senior center, ageWELL KY Study, Spring 2024

	Total N = 75	Richmond n = 24	Paris n = 15	Flemingsburg n=41
Likely to recommend to friends				
Very likely	86%	79%	93%	85%
Likely	13%	21%	7%	15%
Somewhat likely	1%	0%	0%	0%
Satisfied with student interaction				
Very satisfied	86%	74%	93%	88%
Satisfied	13%	26%	7%	10%
Somewhat satisfied	1%	0%	0%	2%
Overall satisfaction with program				
Very satisfied	84%	69%	93%	88%
Satisfied	15%	26%	7%	12%
Somewhat satisfied	1%	5%	0%	0%

N and n = Sample Size

8b. Nursing students: participation and satisfaction

All nursing students were invited to complete an anonymous survey regarding their participation in and satisfaction with the ageWELL KY program. An email invitation was sent to all students enrolled in the community clinical by their clinical instructor inviting them to complete the survey by clicking on the link in the email. The students were asked to identify the site they visited, but otherwise, no identifying information was collected. Participation was voluntary. The overall response rate was 90% (55/61).

Across all sites, students were present on average for 2.1 days, with range from 1 to 7 days. Most of the students measured blood pressure (98%) and provided health coaching (66%) and group education (62%). About half of the students participated in a health assessment (47%) and medication review (45%). See Table 14, page 19.

Student satisfaction with program delivery and relevance of content learned was high. Most agreed that communication and counseling skills improved and understanding of the health needs of older community-residing adults was enhanced. Student experiences in Kentucky were very similar to the student experiences reported in the proof-of-concept study conducted in Washington DC during 2022-2023.

Table 14. Nursing student attendance and type activities provided, total and by senior center, ageWELL KY Study, Spring 2024

	Total N = 55	UKY* Richmond n = 8	UKY* Paris n = 8	MSU* Flemingsburg n= 39
Days attended: Mean (SD)	2.1 (1.9)	3 (1)	6 (2)	1.2 (0.2)
Blood pressure checks	98%	100%	100%	97%
Health Coaching	66%	50%	75%	67%
Health Assessment	47%	87%	38%	41%
Medication Review	45%	75%	88%	31%
Clinic Navigation	11%	13%	50%	3%
Group Education	62%	100%	100%	46%

*UKY = University of Kentucky; MSU = Morehead State University

N and n = Sample Size

On May 22, 2024, a debriefing session was held via Zoom with the site PI, a nursing faculty, meal program directors from each senior center and one DAIL representative. Another nursing faculty shared an evaluation by email prior to the meeting.

Across sites, the nursing faculty stated it was an outstanding learning experience and expressed interest in continuing the collaboration. The meal program directors reported a positive experience between the nursing students and the participants and were also interested in ongoing collaboration.

The DAIL representative attended the Health Fair at the Bourbon County Senior Center and during the debrief meeting she stated she was very impressed at the amount of engagement between the students and seniors.

See Table 15, page 20 for nursing student evaluations by school, sites and total.

Table 15. Nursing students' evaluation, ageWELL pilot study, May 2024

Participation … helped me to … [1]	Total N= 55	UKY Richmond n= 8	UKY Paris n= 8	MSU Flemingsburg n= 39
Better understand health needs of older adults living in the community.				
Strongly Agree	65%	63%	88%	61%
Agree	33%	37%	12%	36%
Neither Agree/Disagree	3%	0%	0%	3%
Improve my communication skills.				
Strongly Agree	62%	50%	75%	61%
Agree	36%	50%	25%	36%
Disagree	3%	0%	0%	3%
Feel more comfortable interacting with older adults.				
Strongly Agree	67%	63%	88%	64%
Agree	31%	37%	12%	33%
Neither Agree/Disagree	3%	0%	0%	3%
See how engaged and interactive older adults are.				
Strongly Agree	67%	50%	88%	67%
Agree	31%	50%	12%	31%
Neither Agree/Disagree	2%	0%	0%	2%
Better understand the importance of chronic disease management to prevent major health events.				
Strongly Agree	64%	63%	63%	64%
Agree	33%	37%	37%	31%
Neither Agree/Disagree	2%	0%	0%	2%
Disagree	2%	0%	0%	2%
Better understand barriers to care experienced byolder adults.				
Strongly Agree	62%	50%	88%	59%
Agree	34%	50%	12%	36%
Neither Agree/Disagree	3%	0%	0%	3%
Improve my ability to provide counseling regarding lifestyle practices, such as diet and physical activity.				
Strongly Agree	67%	50%	75%	69%
Agree	31%	50%	25%	28%
Disagree	3%	0%	0%	3%

N and n = Sample Size. UKY = University of Kentucky; MSU = Morehead State University

Note: 5-point Likert scale = strongly agree/agree/neither agree nor disagree/disagree/strongly disagree

Totals may not = 100% due to rounding.

8c. Comparison of select health outcomes before and after the ageWELL program

The two group design previously described allowed us to compare changes in important health outcomes before and after implementation of the ageWELL program. Outcomes included blood pressure, BMI, physical activity and self-rated health

Participants at each of the six sites who completed measurement at baseline and follow-up made up the evaluation sample, which totaled 154. See Table 2, page 6, for participation and retention rates by senior center site.

Results are presented in Table 16, with averages (means) compared at baseline and follow up for each health outcome and by group. A reminder that the two groups are the ageWELL group and the usual program group (did not participate in ageWELL).

Table 16. Changes in health outcomes, ageWELL KY program, by group, 2023-2024

Outcome Variable	No. in group	Baseline M(SD)	Follow Up M(SD)	Within Group Change	*P value*
Systolic BP mm Hg					
ageWELL	83	130.8(15.5)	131.9(14.6)	1.1	0.16
Usual Program	71	127.2(14.2)	130.4(11.9)	3.2	
Diastolic BP mm Hg					
ageWELL	83	77.5 (11.1)	76.1 (9.8)	-1.4	0.06
Usual Program	71	74.5 (10.6)	73.9 (9.2)	-0.6	
BMI kg/m^2					
ageWELL	82	31.8 (7.6)	31.6 (7.7)	-0.2	0.73
Usual Program	71	31.7 (7.6)	31.2(7.4)	-0.5	
Aerobic activity [2]					
ageWELL	83	4.5 (1.9)	4.4 (1.97)	-0.1	0.14
Usual Program	71	5.2 (1.9)	4.8 (1.7)	-0.4	
Strengthening & Flexibility [3]					
ageWELL	83	.70 (.78)	.76(.77)	0.06	0.94
Usual Program	71	.90 (.86)	.79 (.79)	- 0.11	
Self-rated health [4]					
ageWELL	83	3.12 (.85)	3.01 (.79)	-0.11	0.76
Usual Program	71	3.04 (0. 96)	3.00 (.90)	-0.04	

No = Number; M(SD) = Mean (Standard Deviation); BP = blood pressure; mmHg = millimeters of mercury; BMI = Body Mass Index; *P* = significance testing with $p < 0.05$ significant

[1] Analyses adjusted for baseline value of outcome variable, age (continuous), Lives alone (Yes/No) and education (<=High School/any college)
[2] Rapid assessment of physical activity (RAPA) I scale: 1 to 7 range, higher better
[3] Rapid assessment of physical activity (RAPA) II scale: 0 to 2 range, higher better
[4] 5-item scale rated 1 to 5, lower better

The *P* value represents a test as to whether the differences between the groups were statistically significant, which requires a $P < 0.05$. While no P values met this criteria, there are important differences for blood pressure and physical activity we will highlight.

- Systolic blood pressure increased in both groups. However, the increase seen in the ageWELL group (1.1 mm Hg) was less than the increase seen in the usual program group (3.2 mm Hg).

- Diastolic blood pressure decreased in both groups, but more so in the ageWELL group (-1.4 mm Hg) compared to the usual program group (-0.4 mm Hg).

- Aerobic activity decreased in both groups. However, the decrease was less in the ageWELL group (-0.1) compared to the usual program group (-0.4).

9. Conclusions and Recommendations

Similar to the DC study, the ageWELL KY replication study represented the successful collaboration of partners across multiple sectors that included a government agency, a national foundation, three Area Agencies on Aging, three universities and their nursing programs and congregate meal program participants from six eastern Kentucky senior centers. Study deliverables included the following,

- Delivery of the ageWELL program at three sites;
- Evaluation of the feasibility and acceptability of the ageWELL program;
- Evaluation of the effect of the program on select health outcomes;
- Evaluation of an academic practice partnership;
- Description of an older adult sample who use the congregate meal program.

The results presented in this report are consistent with findings from the DC study and support the feasibility and acceptability of an academic practice partnership model that engaged nursing schools to bring nursing students to senior centers that participated in the congregate meal program and provide older adults health, wellness and chronic disease management programming. Service counts showed that meal program participants regularly attended programming, especially the one-on-one visits for blood pressure checks and health coaching. Participants found the programming helped improve their understanding of high blood pressure, improve their diet and be more physically active. Overall, satisfaction with the program and nursing student engagement was high among the older adults participating in the ageWELL program.

The nursing student experience is also an aspect of feasibility and acceptability and key to program sustainability. Service counts and survey results indicated students were engaged and productive. Almost all agreed that the experience benefited their professional growth. Community-located sites serving the congregate meal program are ideal settings to expose students to the care of community-residing older adults, contributing to a future workforce better attuned to the health needs of older adults.

The ageWELL KY study also demonstrated the potential for scalability of the program to a ‘new’ group of older adults and congregate meal program participants in a ‘new’ location. Program appeal and potential to improve health outcomes across diverse populations of older adults was also supported.

Similar to DC, the KY study was not powered (lacked an adequate sample size) to identify significant differences in health outcomes between the ageWELL (treatment) and usual program groups, even if differences were present. Nevertheless, the changes in blood pressure and physical activity seen when comparing the two groups were promising and merit further study with a larger sample. Also like DC, the KY study demonstrated that recruiting and retaining older adults to participate in research by accessing senior centers and engaging congregate meal program users is feasible and acceptable to those involved.

Importantly, this work provides our community partners in Kentucky new insights into the general health and well-being of an older adult population who access services at senior centers, and specifically the congregate meal program. While our sample was made up of participants from six senior centers located in eastern Kentucky, we have demonstrated similarities to other national and state-level samples of older adults, supporting the likelihood that our results will translate to other senior centers and congregate meal program users throughout Kentucky.

We found that most of the ageWELL sample were burdened by multiple chronic conditions that commonly included high blood pressure, arthritis and high cholesterol. Multiple medication use was similarly prevalent and higher than usage rates seen in the NSP sample of congregate meal users. Among the ageWELL sample, fruit and vegetable intake was low, as were physical activity levels – lifestyle practices that contribute to improving health outcomes. Tobacco use remains a concern, particularly among older adults in rural centers. Continuation of programs, like ageWELL that support older adults to manage medications, dietary needs and improve access to a variety of physical activities are indicated. Extending ageWELL programming to include smoking cessation programs in centers where tobacco use is prevalent is also indicated

A particular concern our data uncovered was the prevalence of depression, reported by 34% of our sample, a rate nearly twice as high as national and state-level prevalence. Among our older adult sample, 36% also self-rated their health as fair to poor, a rate considerably higher than the 23% reported by the NSP sample. There is likely a link between depression and self-rated health that would benefit from further evaluation. Accessing senior centers for mental health programs may be one strategy to reach a vulnerable population to improve mental health outcomes and general well-being.

Food insecurity among older adults remains a priority area to address. Recent data suggest rates are rising among older adult populations across the US (1, 8). Among the ageWELL sample, more than one in ten were food insecure, which included 4% who were experiencing very low food security at the March/April measurement. At the same

time, we found that fewer than one in five reported receiving SNAP benefits or accessing the Commodity Supplemental Food Program. Even the most popular food program - the Senior Farmers Market – was used by fewer than one-third. Government-supported food programs are one strategy to increase access among older adults to healthy meals and prevent food insecurity. Efforts to increase food program participation are recommended. Our data suggest such efforts may particularly benefit participants at rural and more urban centers.

In conclusion, prioritizing the health needs of community-residing older adults by expanding the services provided by senior centers is one strategy to help aging adults age in place and age healthy. Our research in DC and now in eastern Kentucky, suggest the ageWELL program and the academic practice partnership model it represents is feasible and acceptable to participants, as well as scalable across a range of locations and among diverse groups of older adults.

Partnering nursing students and older adults in community locations that are easily reached and familiar to older adults holds potential to impact important health outcomes, such as improve blood pressure control and increase physical activity levels. At the same time, the program contributes to the preparation of a future health workforce sensitive to the needs of an aging population and better prepared to meet these needs in the community, where older adults live their lives.

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