ageWELL DC Pilot Study: Proof of Concept

Report submitted to the National Foundation to End Senior Hunger

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Executive Summary

The Congregate Nutrition Services section of the Older Americans Act provides nutritious meals, health promotion programming and social engagement for seniors (age 60 and older) in congregate (group) dining sites in a variety of neighborhood locations throughout the US, creating a unique national network of trusted gathering places for older adults. Expanding services at dining sites to address the increasingly complex health and social needs of a burgeoning aging population, most with multiple chronic conditions, is one approach to help seniors *age well*.

The ageWELL DC pilot study used an academic practice partnership model to engage two DC nursing schools to bring prelicensure nursing students to dining sites to provide tailored (individual) and targeted (group) programming to seniors to improve self-management of health, wellness and chronic conditions. Six dining sites agreed to study participation, with two sites randomized to provide the ageWELL program. Students, with a nursing faculty were on site once weekly for 10-12 weeks, February to April 2023.

Evaluation included meal program participants completing measurement activities (blood pressure, height/weight and survey) before (N=215) and after (N=189) program delivery. Program participants also completed a satisfaction survey. Nursing students documented their engagement with seniors (service counts) and following the program, completed an evaluation of the dining site experience.

Across sites, there were 627 service counts, including tailored (57%) and targeted (22%) services and a health fair (21%). Most seniors participated weekly or twice monthly, with satisfaction with programming and nursing student engagement high. Nursing students were productive and engaged, with most reporting a better understanding of the health needs of community-residing older adults following the experience. Dining site leadership, nursing administrators and clinical faculty were interested in continuing the partnership and ageWELL programming. The small sample size limited evaluation of health outcomes. However, a decrease in systolic blood pressure of 5.9 mm Hg following the program that favored ageWELL compared to usual program participants was promising and merits further evaluation.

Measurement of meal program participants found most were female, lived alone and self-reported race/ethnicity as non-Hispanic Black. Average age was 74 years, with 54% reporting education as high school or less. Most reported multiple chronic conditions, with hypertension, high cholesterol, arthritis and diabetes common. Most took 3-5 or more medications daily. The majority ate 3-5 meals/week at the dining site. SNAP and the Senior Farmers Market Program were similarly popular among seniors, used by about one-third. Food insecurity was stable over the measurement period at 10%.

Study results support *proof of concept* and feasibility, acceptability and potential of the ageWELL program to improve participant's self-management of health, wellness and chronic conditions. Expanding access to ageWELL and continuing partnerships with local nursing schools for program delivery is one approach to improve the health and wellbeing of DC seniors whose numbers are growing and health needs are increasing.

1. Overview: Older Americans Act and Congregate Nutrition Services

Nationwide, the Older Americans Act (OAA) authorizes the Title III-C Nutrition Services Program, which supports nutrition services for adults age 60 and older (hereafter, older adults). The aims of the OAA are to reduce hunger, food insecurity and malnutrition; facilitate socialization; and promote the health and well-being of older adults (1). The latter is achieved by assisting with access to nutrition and other disease prevention and health promotion services and delaying onset of adverse health conditions.

Because most older adults age in place in their own homes and communities, access to community-based support services is essential. The Congregate Nutrition Services section of the OAA provides nutritious meals, nutrition-related services, social engagement and health promotion programming in congregate or group settings in a variety of neighborhood locations (1). These services are also a critical link to other community-supported services needed by older adults, such as transportation, physical activity and falls prevention programs and assistance with housing concerns.

In the District of Columbia (DC), the Department of Aging and Community Living (DACL) administers the OAA Congregate Nutrition Program. In partnership with local community organizations, known as lead agencies, DACL provides congregate nutrition services in more than 40 neighborhood dining sites across the districts' eight wards (2). In DC, and elsewhere, the availability of a nutritious meal offered in a familiar and easy-to-reach community setting has resulted in a unique national network of trusted gathering places for older adults.

As communities refocus on the health and wellbeing of older adults following the Covid-19 pandemic, programming that is responsive to a burgeoning aging population with increasingly complex health and social needs is a priority. The time is right to explore new partnerships and more curated programming for the older adults that access community dining sites and the congregate nutrition program.

2. More about the burgeoning older adult population

Nationwide, the older adult population is projected to reach 94.7 million in 2060 or one quarter of the US population (3). This follows a 38% population increase seen between 2010 and 2020 and a 22% population growth expected between 2020 and 2040 (4).

Paralleling this unprecedented increase in population growth is a rapid rise in chronic disease prevalence. In 2017, among fee-for-service Medicare beneficiaries, 31% had no chronic conditions or only one, while 69% experienced multiple chronic conditions, defined as "*two or more chronic conditions that collectively have an adverse effect on health status, function, or quality of life and that require complex healthcare management, decision-making, or coordination*" (5). Most older adults are likely experiencing some combination of the following conditions, which top the list of the most common chronic diseases. In descending order of prevalence, the list includes hypertension, high cholesterol, arthritis, diabetes and coronary artery disease.

Locally, nearly 87,000 adults in the District of Columbia or 13% of the population were age 65 and older at the time of the 2020 census, with numbers expected to reach 104,000 by 2030 (6, 7). Most were female (57%), identified as Non-Hispanic Black (55%) and lived alone (75%), with median age 73 years.

Among DC residents age 65-74 years, 45% experienced multiple chronic conditions, with Black adults (52%) disproportionately impacted compared to Asian/Pacific Islander (39%), Hispanic (37%) and White (35%) adults (8). Although data describing multiple chronic conditions for DC residents age 75 and older is not reported, it's likely the rate is much higher, as chronic disease prevalence increases with advancing age.

3. An academic practice partnership: ageWELL DC Pilot Study

The ageWELL DC pilot study was funded by the National Foundation to End Senior Hunger (NFESH) through an award from DACL. Using an academic practice partnership model, local nursing schools worked with DACL-supported lead agencies to bring nursing students to select dining sites to provide tailored (individual) and targeted (group) programming to older adults, with the goal to improve self-management of health, wellness and chronic disease conditions. Meal program participants across dining sites were also invited to take part in evaluation activities that included measuring blood pressure, height, weight and completing a survey, before (baseline) and after (follow up) implementation of the 12-week ageWELL program,

The pilot study used a two-group randomized controlled trial design. Dining sites were randomly selected to continue usual programming or supplement usual programming with ageWELL. This allowed a comparison of health outcomes (i.e. blood pressure) between the two groups. Randomization of dining sites occurred within pairs matched by type of site, which included wellness center, recreation center and public housing.

Given the pilot nature of the study and funding and staffing constraints, the number of study sites was limited to six. With the small sample size, the study was not powered (lacked a large enough sample) to detect a difference in health outcomes between groups, even if a difference was present. However, the pilot allowed evaluation of *proof of concept*, and an assessment of feasibility, acceptability and potential of the ageWELL program and an academic practice partnership model to improve program participants' self-management of health, wellness and chronic disease conditions.

The study's principal investigator (PI) was Martha (Marti) Kubik, PhD, RN, FAAN, a professor of nursing at George Mason University (GMU). The GMU Institutional Review Board (IRB) approved the research study. The study period was 8/1/2022 to 9/30/2023.

A description of study implementation and process and outcome evaluation follows.

4. Selection of community dining sites

Eligibility criteria for community dining sites were developed in consultation with DACL staff familiar with sites and operations. Eligible dining sites were required to have ≥20 registered meal participants as of September 2022, be open ≥4 hours/day 5 days/week and be located near metro/bus transit to facilitate travel by nursing students.

DACL staff recommended six dining sites and notified lead agencies. See Table 1. In September 2022, Dr. Kubik, along with DACL and NFESH staff met virtually with lead agency leadership to review the ageWELL pilot study aims, measurement of meal program participants, partnership model with nursing schools for implementation of the program and study timeline. In person visits were then made to the dining sites by Dr. Kubik, the study PI, joined by lead agency staff and the meal program manager. Lead agencies agreed to a randomization process to select sites for the ageWELL program.

Table 1. Lead agencies and community dining sites, ageWELL Pilot Study, 2022-2023

Lead Agency	Dining Site (Ward)	Location
Mary's Center	Bernice Fonteneau Senior Wellness Center* (1)	3531 Georgia Ave NW, Washington, D.C. 20010
Terrific Inc.*	Fort Stevens Recreation Center (4)	1327 Van Buren St NW, Washington, D.C. 20012
Mary's Center	Hattie Holmes Senior Wellness Center* (4)	324 Kennedy St NW, Washington, D.C. 20011
Seabury Resources for Aging	Edgewood Terrace Apartments Public Housing (5)	635 Edgewood St NE, Washington, D.C. 20017
East River Family Strengthening Collaborative	Kenilworth Recreation Center (7)	1300 44th St NE, Washington, DC 20019
East River Family Strengthening Collaborative	Knox Hill Apartments Public Housing (8)	2700 Jasper St SE, Washington, D.C. 20020

* Terrific Inc managed the congregate meal program at the senior wellness center sites.

5. Recruitment and measurement of meal program participants

A convenience sample of meal program participants were recruited at each dining site to participate in measurement activities (blood pressure, height/weight and a survey). Eligibility criteria included the participant be ≥ 60 years old, be a registered meal program participant and speak English. Funding limits precluded cost of translators and translation of materials to languages other than English.

Recruitment was coordinated with meal program managers and lead agency staff. Flyers describing measurement, eligibility criteria and measurement dates were posted at dining sites and distributed to meal program participants. Four measurement visits were made to all but one site that had three visits, as a result of a scheduling conflict.

The first (baseline) measurement occurred in fall 2022 (October 24 – December 13, 2022). Eligible and interested participants provided written consent. Participants who completed measurement received a $20 gift card as a thank you for their time. Across the six sites, 215 meal program participants were measured. The second (follow up) measurement occurred in spring 2023 (April 3 – May 15, 2023). 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. Across the six sites, 189 participants were measured. The overall retention rate was 88%. See Table 2 for details by site.

Table 2. Measurement participation and retention rates by site, ageWELL Pilot Study

Dining Site (Ward)	Baseline (Fall 2022)	Follow Up (Spring 2023)	Retention Rate
Bernice Founteneau Senior Wellness Center (1)	38	32	84%
Fort Stevens Recreation Center (4)	21	18	86%
Hattie Holmes Senior Wellness Center (4)	39	35	90%
Edgewood Terrace Apartments Public Housing (5)	45	41	91%
Kenilworth Recreation Center (7)	29	25	86%
Knox Hill Apartments Public Housing (8)	43	38	88%
Grand Total	**215**	**189**	**88%**

Research staff conducting measurement were faculty and students from the GMU School 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. One or two 2-person teams, each consisting of a faculty or graduate student who was an RN and an undergraduate nursing student conducted measurement at each site.

6. ageWELL measurement sample: Who are they?

6a. Select demographic characteristics

Using the baseline sample (N=215), most participants were female (79%), lived alone (71%), and self-reported race as Black/African American (94%) and ethnicity as not Hispanic or Latino/a (97%). Both mean and median age was 74 years, with range 60 to 101. Slightly more than one-half reported their highest level of education as a high school degree/GED (30%) or less (24%).

The distribution by age, race, ethnicity and living alone was consistent with the distribution of the older adult population residing in DC, based on 2020 census data (see page 5). Distribution by sex, race and ethnicity also mirrored districtwide data collected by DACL for congregate meal clients for the period from March 1, 2022 to February 28, 2023, which showed most were female (66%), Black/African American (77%) and not Hispanic or Latino (87%) (C Geyser, personal communication, 3/7/2023),

Table 3. Demographic characteristics of congregate meal program participants, ageWELL Pilot Study sample, Fall 2022 and Title III-C Nutrition Services Program (NSP) sample, 2017

	ageWELL N=215	NSP N=598
Age, years Mean	74	77
Age category, years		
≤ 70	33%	22%
71-74	20%	19%
75-84	36%	41%
≥ 85	11%	18%
Race		
Black/African American	94%	15%
White	1%	76%
Asian	1%	5%
American Indian/Alaskan Native	1%	4%
> one race/not specified	2%	---
Ethnicity		
Non-Hispanic	97%	89%
Hispanic	3%	11%
Sex		
Female	79%	67%
Male	21%	33%
Education level		
≤ High School	54%	54%
Any college/trade school	46%	46%
Lives alone	71%	60%
Ever served on active duty	5%	17%
Has health insurance	100%	99%

A nationwide evaluation of the Title III-C Nutrition Services Program (NSP) included a description of congregate meal program participants (9). Table 3 shows a comparison of the NSP and ageWELL samples on key demographic factors, providing an opportunity to assess representativeness of the ageWELL sample. With the exception of race and active duty service, distributions were similar for most factors, although ageWELL participants were slightly younger and more were female and lived alone than NSP participants. Education level, a proxy for income, was the same for both samples. Health insurance coverage was common across samples.

Although magnitude of percentages vary by sample, with a few exceptions, the distribution of key demographic factors among the ageWELL sample is generally representative of older adults residing in DC and older adults in DC and nationally who use the congregate meal program.

6b. Select health outcomes, measured

Blood pressure and body mass index (BMI) are important vital signs and key measures of health. Tracking blood pressure and BMI over time provides important population data about prevalence and at the individual level, a measure of health and/or response to treatment. While self-report of high blood pressure is important, measuring blood pressure allows assessment of blood pressure control. For height and weight, measured values inform a more reliable and valid BMI than self-report, which often overestimates height and underestimates weight (10).

The most common form of high blood pressure in older adults is isolated systolic hypertension, defined as diastolic blood pressure less than 80 mm Hg and systolic blood pressure of 130 mm Hg or higher (11). The treatment goal for systolic blood pressure is less than 130 mm Hg. Among the ageWELL sample, 76% reported having high blood pressure, with measured results consistent with isolated systolic hypertension. Mean systolic blood pressure was 138 mm Hg, indicating most did not meet the treatment goal of less than 130 mm Hg. See Table 4.

Table 4. Blood pressure (BP) and body mass index (BMI), ageWELL Pilot Study, Fall 2022

Blood Pressure (BP)	**N=214**	
Systolic BP mm Hg	M(SD)	138 (19.90)
Systolic BP, by category [1]	Normal < 120	15%
	Elevated 120-129	23%
	Stage 1 130-139	18%
	Stage 2 ≥ 140	44%
Diastolic BP mm Hg	M(SD)	71 (10.94)
Diastolic BP, by category [1]	Normal < 80	76%
	Stage 1 80-89	20%
	Stage 2 ≥ 90	4%
Body Mass Index (BMI)	**N=211**	
BMI kg/m^2	M(SD)	31 (7.12)
BMI, by category [2]	Underweight < 18.5	2%
	Normal 18-5 to < 25	22%
	Overweight 25 to < 30	27%
	Obese 30 to < 40	37%
	Severe Obesity ≥ 40	11%

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

BMI calculated using measured height and weight indicates that 48% or nearly one-half of the ageWELL sample were obese, with more than one in 10 with severe obesity. Obesity in older adults is associated with heart disease, stroke, diabetes and cancer. It also impacts quality of life and risk of institutionalization, predisposing older adults to disability, decreased physical functioning and falls (12).

6c. Select health outcomes, self-reported

See Table 5, page 11, for select outcomes, comparing the ageWELL and NSP samples.

Nationwide, cardiovascular disease (i.e. heart attack and stroke) is the leading cause of death in older adults (5). Prevalent risk factors include hypertension (57%), high cholesterol (48%), and diabetes (27%). Districtwide, prevalence estimates for older adults are 61%, 50% and 19%, respectively (13). Among the ageWELL sample, rates of 76%, 56% and 32%, respectively, were higher than both national and district rates but similar to the rates for the NSP congregate meal participant sample.

Multiple chronic conditions were reported by 79% of the ageWELL sample, exceeding the 69% rate reported by Medicare beneficiaries (5). A consequence of multiple chronic conditions is polypharmacy, defined as taking two or more medications daily. Polypharmacy was similar among the ageWELL and NSP samples, with 39% taking three or more medications daily and 26-29% six or more. In addition to the expense and the challenges of managing multiple prescriptions, polypharmacy is associated with adverse outcomes that include mortality, falls, adverse drug reactions, longer hospital stays and higher hospital readmission rates (14).

> ***Disproportionate burden**. A larger percentage of ageWELL participants from public housing sites (38%) took six or more medications daily compared to participants from recreation center (18%) and senior wellness center (17%) sites. Differences were statistically significant at p < 0.03 level.*

Self-rated health status, a single-item measure of how one perceives their health is considered a valid and reliable predictor of morbidity, mortality and functional status (15). Scoring is on a 5-point scale – excellent, very good, good, fair, poor. Among both the ageWELL and NSP sample, 23% reported their health status as fair or poor, which is consistent with the 25% prevalence rate reported by older adults nationally.

> ***Disproportionate burden**. A larger percentage of ageWELL participants from public housing sites (32%) reported health as fair or poor compared to participants from recreation center (24%) and senior wellness center (13%) sites. Differences were statistically significant at p < 0.02 level.*

Loneliness was measured using the 3-item UCLA loneliness scale. considered a reliable and valid measure of loneliness among older adults (16). Among the ageWELL sample, about one in five (18%) were categorized as lonely. Loneliness in older adults has been linked to high blood pressure, heart disease, obesity, anxiety, depression and cognitive decline (17).

Table 5. Self-reported health outcomes of congregate meal program participants, ageWELL Pilot Study sample, Fall 2022 and Title III-C Nutrition Services Program (NSP) sample, 2017

	ageWELL N=212	NSP N=598
Chronic Medical Conditions		
High Blood Pressure	76%	70%
Arthritis	57%	60%
High Cholesterol	56%	57%
Diabetes	32%	33%
Asthma/COPD	22%	39%
Heart Disease	17%	35%
Depression	15%	---
Cancer	14%	20%
Stroke	10%	10%
Kidney Disease	8%	11%
Number of chronic medical conditions		
0-1	21%	Not reported
2-3	41%	
≥ 4	37%	
Prescription Medications		
0	8%	11%
1-2	27%	21%
3-5	39%	39%
≥ 6	26%	29%
ER visit in last 3 months		
None	80%	Not reported
≥ one visit	20%	
Loneliness		
Yes	18%	Not reported
Self-rated health		
Excellent	6%	13%
Very Good	27%	27%
Good	44%	37%
Fair	19%	19%
Poor	4%	4%
Aerobic activity		
Active	120 (57%)	Not reported
Underactive/sedentary	92 (43%)	
Strengthening activities n(%)		
Yes	108 (51%)	Not reported
Flexibility activities n(%)		
Yes	139(66%)	Not reported

Lifestyle practices that include physical activity contribute to the prevention and management of many chronic conditions. To assess physical activity, the ageWELL survey included a 9-item scale validated for use with older adults (18). Across the sample, 57% reported physical activity levels consistent with CDC recommendations for older adults, with 66% reporting flexibility activities and 51% strengthening activities, once a week or more.

> ***Disproportionate burden**. A smaller percentage of ageWELL participants from public housing sites were physically active (36.5%) and engaged in flexibility (47%) and strengthening (35%) activities than participants from recreation center (72%, 74%, and 52%, respectively) and senior wellness center (69%, 80.5%, and 67.5%, respectively) sites. Differences were statistically significant at $p < 0.001$ level for all three activity measures*.

6d. Food-related outcomes

Prevalence of food-related outcomes were compared at baseline (fall 2022) and six months later at follow up (spring 2023). Outcomes included assessment of food security, frequency of eating meals at the dining site and satisfaction with the meal program and participation in nutrition assistance programs. See Table 6, page 13.

Food Security. Food security was assessed using the six-item Short Form of the U.S. Household Food Security Survey (19). The percent of the sample that was food insecure was stable over the six month period at 10%. For very low food security, there was a slight shift from 3% to 4%. Nationwide, 7% of older adults have food insecurity and 3% have very low food security (20). Overall rates for DC were 11% and 3%, respectively and are consistent with the ageWELL sample rates.

Congregate Meal Program. Across the two timepoints, a majority of the ageWELL sample reported eating 3-5 meals per week at the dining site, with the frequency of eating meals stable during the prior three months. However, at the six month follow up, there was a slight decline in the percent eating 3-5 meals per week, from 72% to 67%, with 9% reporting eating meals at the dining site less often. While the majority rated meals as fair or good and indicated they would recommend the meal program to others, the percent of the sample rating meals as poor doubled from 11% at baseline to 22% at follow up. The percent of meal program participants who would not recommend the program to others increased from 23% at baseline to 32% at follow up.

Nutrition Assistance Programs. Over the six month period, 30-32% of the sample did not participate in any nutrition assistance programs. The Supplemental Nutrition Assistance Program (SNAP) and the Senior Farmers Market Nutrition Program were the most popular, used by 39% and 37% at baseline and 34% and 35% at follow up. Food pantry/food bank use remained about the same over the six month period, at 26% and 28%. Use of the Commodity Supplemental Food Program increased from 19% in fall to 30% in the spring. Participation in one program versus ≥ two programs remained stable over the 6 month period.

Table 6. Food-related outcomes, ageWELL Pilot Study, Fall 2022 and Spring 2023

	Fall, 2022	Spring 2023
Food Secure	n=209	(n=189)
Yes	90%	89%
Food Insecure	n=209	(n=189)
Low food security	7%	6%
Very low food security	3%	4%
In usual week, number of days eating a meal at dining site	(n=205)	(n=176)
1 day	16%	17%
2 days	13%	16%
3 days	24%	22%
4 days	17%	11%
5 days	31%	34%
In last 3 months, frequency of eating a meal at dining site	(n=205)	(n=177)
More often	18%	15%
Less often	23%	32%
About same	59%	54%
Rating of meal at dining site	(n=205)	(n=179)
Excellent	6%	3%
Very good	16%	12%
Good	41%	37%
Fair	26%	27%
Poor	11%	22%
Would recommend meal program to others	(n=205)	(n=184)
Yes	77%	68%
No	23%	32%
Participation in each food assistance program **	(n=212)	(n=189)
Did not participate in any	32%	30%
Supplemental Nutrition Assistance Program (SNAP)	39%	34%
Senior Farmers' Market Nutrition Program (SFMNP)	37%	35%
Commodity Supplemental Food Program (CSFP)	19%	30%
Food pantry/food bank	26%	28%
Child and Adult Care Food Program (CACFP)	1%	1%
Participation in multiple food programs	(n=212)	(n=189)
None	32%	31%
1 program	32%	30%
2 programs	18%	24%
3 programs	13%	9%
4 programs	4%	6%

Disproportionate use: *A larger percentage of ageWELL participants from public housing sites were enrolled in SNAP and accessed food banks in the fall (38% and 27%, respectively) and spring (51% and 34%, respectively), compared to participants from recreation center sites in the fall (30% and 19%, respectively) and spring (22.5% and 22.5%, respectively) and senior wellness center sites in fall (22% and 13%, respectively) and spring (15% and 19%, respectively). For SNAP enrollment, differences were statistically significant at p < 0.001 level for both fall and spring. For food bank use, differences were statistically significant at p < 0.001 for fall and p = 0 .04 for spring.*

Disproportionate use*: A larger percentage of ageWELL participants from public housing sites used 2 or more food programs in the fall and spring (46% and 48%, respectively) compared to participants from recreation center sites in the fall and spring (26% and 28%, respectively), and senior wellness center sites in the fall and spring (29% and 34%, respectively). Differences were statistically significant at p < 0.009 level for fall and p = 0.02 for spring.*

7. Feasibility of ageWELL program delivery

7a. Nursing school and dining site partnerships

Nursing school partners included Trinity Washington University School of Nursing and Health Professions (Trinity) Bachelors of Science in Nursing Program and the University of the District of Columbia (UDC) at the Community College, Associate of Applied Science in Nursing Program. Both are accredited prelicensure (entry-level) programs and both are approved by DC Health, Health Regulation and Licensing Administration.

Nursing administrators with both programs agreed to placement of nursing students at a dining site for 10-12 weeks during the spring 2023 semester as part of a required community-based clinical experience. Groups of six to nine students completed 3-4 week rotations, on site from 930 am to 230 pm once a week on a preassigned day. A program faculty, with a DC RN license and graduate degree in nursing was also on site to supervise the students. Each nursing school and the lead agency responsible for the dining site signed a memorandum of understanding (MOU) that was reviewed and approved by their respective institution/agency.

A third nursing program that initially expressed interest in study participation later declined due to faculty staffing constraints. Due to the late notice of withdrawal, we were not successful in recruiting a replacement. As a result, we were limited to two dining sites instead of three to implement the ageWELL program. The choice of dining site type to exclude was based on the size of the baseline measurement sample, with the recreation center sites selected. See Table 2, page 7. The lead agencies for the recreation center sites were notified and in agreement with the decision.

Randomization of dining sites occurred following completion of baseline data collection. Within two pairs matched by site type, the Bernice Fonteneau Senior Wellness Center and Knox Hill Apartments (public housing) were selected for the ageWELL program. Nursing schools were assigned to dining sites based on proximity. See Table 7.

Table 7. Nursing school and dining site partners, ageWELL Pilot Study, Spring 2023

Dining Site (Lead Agency)	Nursing School	Nursing Program	Rotation Dates (# weeks)
Bernice Fonteneau Senior Wellness Center (Mary's Center)	Trinity Washington University	Bachelors of Science in Nursing	1/31/23 – 4/25/23 (12 weeks)
Knox Hill Apartments (East River Family Strengthening Collaborative)	University of the District of Columbia	Associate of Applied Science in Nursing	2/3/23 – 4/28/23 (10 weeks)

In person meetings at each dining site with the site manager and nursing faculty were arranged by Dr. Kubik, who also attended. Space for student-faculty conference and to conduct one-on-one visits with ageWELL program participants were identified. The process for faculty supervision of students was reviewed, as well as coordination of planned activities with dining site managers. The first day of each rotation included a student and faculty orientation led by Dr Kubik. See Table 8 for orientation content.

Table 8. Nursing student orientation content, ageWELL Pilot Study, Spring 2023

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

The primary aim of the ageWELL program was to improve self-management of health, wellness and chronic disease conditions among program participants. The partnership between local nursing schools and lead agencies brought nursing students to two dining sites to provide tailored (individual) and targeted (group) services to older adults, once a week for 10-12 weeks. Students provided nursing care under the supervision of an onsite nursing faculty. See Figure 1 (page 16) for a program overview.

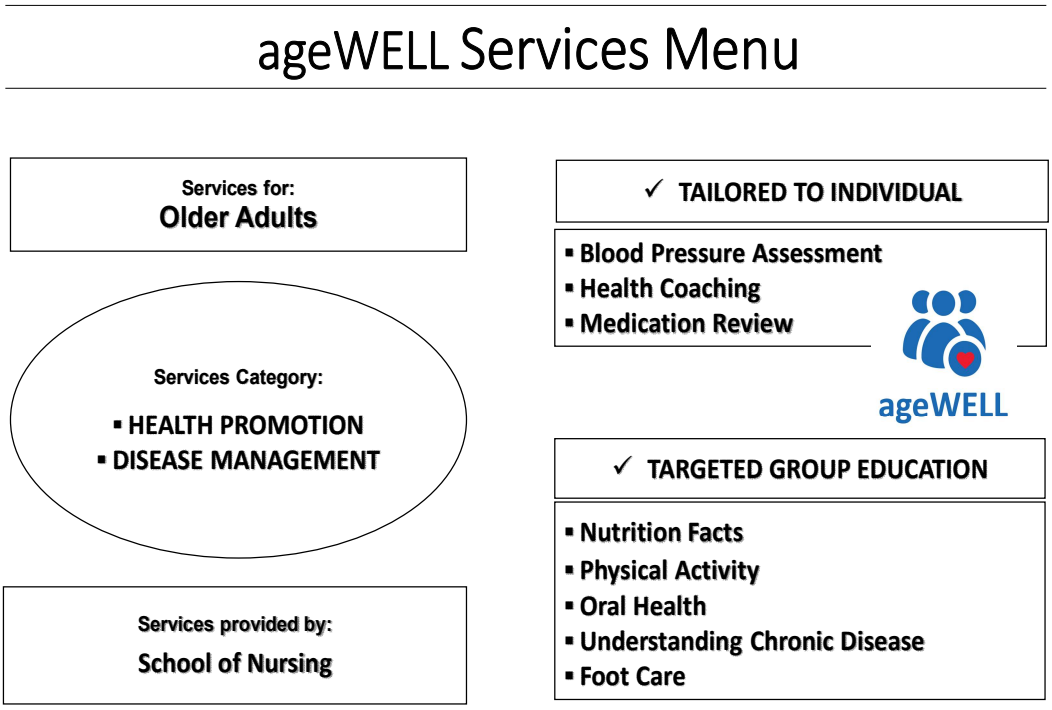

Figure 1. ageWELL program overview.

Tailored (individual) services were provided during one-on-one visits with a nursing student and an ageWELL program participant. The visit included a blood pressure (BP) with 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 name and tailored service provided. Logs were submitted to the onsite faculty at days end, who scanned and emailed to research staff, who maintained the records.

Targeted group education services on a range of health topics were provided weekly by the nursing students. Flyers promoting the topic were developed by study staff and posted by site staff in advance of the presentation. 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 for a walk, demonstrating how a shared activity and social support from others can foster success. Small gift giveaways were provided to encourage attendance and engagement. See Table 9, page 17.

Table 9. Group education topics and gift giveaways, ageWELL Pilot Study, spring 2023

Health Topic	Gift/Raffle Giveaways
Mouth Care Matters (Oral Health)	Gift: Toothbrush + Toothpaste + Water Bottle
Foot Health: Foot Check	Gift: Lotion + soft cleaning cloth + loofah
Remembering to Take Your Medicine	Gift: Pill organizer
Portion Size – Is More Better?	Raffle: 12-piece food storage containers
Salt, You and High Blood Pressure	Gift: measuring cup + heart-shaped stress toy
Physical Activity and Healthy Aging	Gift: Step counter
Heart Health	Gift: Veggie peeler + veggie cleaning brush
Sun safety	Gift: Sun visor + eyeglass straps

A **Health Fair** was held at each site the last day of the ageWELL program. Nursing students staffed stations and shared information one-on-one with interested participants. Small gift giveaways at each station encouraged engagement. See Table 10 for health fair topics and service counts. Across sites, 38 participants generated 130 service counts, engaging on a variety of health topics.

Table 10. Health Fairs, topics and service counts, by site, ageWELL Pilot Study, Spring 2023

		SERVICE COUNTS							
Dining Site	**# of participants**	**Foot Health**	**Oral Health**	**Heart Health**	**Physical Activity**	**Med Review**	**Summer Safety**	**BP Screen**	**Total Counts**
KH*	17	8	4		10	9		12	**43**
BFSWC*	21	21	14	15			20	17	**87**
Totals	**38**	**29**	**18**	**15**	**10**	**9**	**20**	**28**	**130**

* KH = Knox Hill; BFSWC = Bernice Fonteneau Seniors Wellness Center

At each group presentation and health fair, a nursing student was assigned to record names of all participants. Logs were submitted to the onsite faculty at days end, who scanned and emailed to research staff, who maintained the records.

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

Table 11 (page 18) provides a summary by dining site and overall, for service type (tailored, targeted, health fair) and service counts (contact between participant and nursing student) for the 10-12 week program period. Across sites, a grand total of 627 service counts were documented. More than one-half of the total service counts (355/627 or 57%) were tailored (individual) services. Blood pressure screening was the most common tailored service (238/355 or 67%). The health fair, a one-time, two hour event, generated 21% (130/627) of the service counts. Targeted group education was better attended at the Bernice Fonteneau Wellness Center site, accounting for 80% (114/142) of the total counts for this service type.

Table 11. Summary of service counts, by total, site and type, ageWELL Pilot Study, Spring 2023

Activity	Knox Hill (10 days) Service Counts	BFSWC * (12 days) Service Counts	Grand Total Service Counts
a. Tailored/Individual	187	168	355
- (# BP screen)	(110)	(128)	(238)
- (# Health coaching)	(60)	(22)	(82)
- (# Foot Care)	(17)	(18)	(35)
b. Targeted/Group Education	28	114	142
c. Health Fair	43	87	130
Grand Total (sum: a + b + c)	**258**	**369**	**627**

* BFSWC = Bernice Fonteneau Seniors Wellness Center

8. Acceptability of the ageWELL program to participants

8a. Meal program participants: Participation and satisfaction

As part of the spring 2023 follow up measurement, meal program participants at the two dining sites that provided the ageWELL program completed a brief survey to assess their participation in program activities and satisfaction with the program. Across the two sites, 55 of the 70 participants who completed measurement indicated they also participated in ageWELL program activities, providing the sample for the evaluation.

Across sites, blood pressure checks were the most common activity, reported by almost all (98%). Nutrition education (80%) and medication review (59%) were also popular activities, followed by education about mouth care (55%), foot care (55%) and physical activity (51%). Almost half reported participating in a walking activity, with rates at the senior wellness center site (60%) almost twice the public housing site rate (36%). Summer safety education occurred at only one site and as part of the health fair.

Overall, nearly one-half (47%), reported participation in ageWELL activities every week and another 29% participated twice a month, with rates of both higher at the senior wellness center site compared to the public housing site.

Across sites, meal program participants indicated the ageWELL program was very helpful/helpful in improving their understanding about high blood pressure (86%) and getting them to improve their diet (85%) and be more physically active (77%). Rates were similar across the two dining sites. Most (93%) were very likely/likely to recommend friends participate in a program like ageWELL. Similarly, most were very satisfied/satisfied with their interactions with nursing students (98%) and with the ageWELL program overall (98%).

See Table 12 (page 19) and Table 13 (page 20) for results by site and total.

Table 12. Participation and helpfulness of program activities, meal program participants, total and by dining site, ageWELL Pilot Study, Spring 2023

	Total N = 55	Knox Hill n = 29	BFSWC* n = 26
Participation in activity: Yes			
Blood pressure checks	98%	97%	100%
Nutrition education	80%	72%	88%
Physical activity education	51%	41%	61.5%
Medication review	59%	62%	56%
Foot care education	55%	62%	46%
Walking	47%	36%	60%
Mouth care education	55%	52%	58%
Summer safety education **			42%
Frequency of participation			
Every week	47%	41%	54%
2 x month	29%	24%	35%
Once a month	16%	24%	8%
< once a month	7%	10%	4%
Helped to improve understanding of high blood pressure			
Very helpful	61%	61%	61%
Helpful	25%	29%	22%
Somewhat helpful	10%	11%	9%
A little helpful	4%	---	9%
Not at all helpful	---	---	---
Helped to improve diet			
Very helpful	59%	59%	60%
Helpful	26%	24%	28%
Somewhat helpful	9%	10%	8%
A little helpful	4%	3%	4%
Not at all helpful	2%	3%	---
Helped to be more physically active			
Very helpful	42%	37%	48%
Helpful	35%	33%	36%
Somewhat helpful	8%	15%	8%
A little helpful	10%	11%	8%
Not at all helpful	6%	4%	---

* BFSWC = Bernice Fonteneau Seniors Wellness Center

** Only provided at BFSWC.

Table 13. Participant satisfaction with ageWELL program, meal program participants, total and by dining site, ageWELL Pilot Study, Spring 2023

	Total N = 55	Knox Hill n = 29	BFSWC n = 26
Likely to recommend to friends			
Very likely	80%	83%	77%
Likely	13%	14%	11.5%
Somewhat likely	5%	3%	8%
A little likely	---	---	---
Not at all likely	2%	---	4%
Satisfied with student interaction			
Very satisfied	82%	90%	73%
Satisfied	16%	10%	23%
Somewhat satisfied	2%	---	4%
A little satisfied	---	---	---
Not at all satisfied	---	---	---
Overall satisfaction with program			
Very satisfied	80%	83%	77%
Satisfied	18%	17%	19%
Somewhat satisfied	2%	---	4%
A little satisfied	---	---	---
Not at all satisfied	---	---	---

* BFSWC = Bernice Fonteneau Seniors Wellness Center

8b. Nursing students: Participation and satisfaction

Nursing students from Trinity and UDC were invited to complete a brief survey about their participation and satisfaction with the ageWELL program. All students enrolled in the spring semester community clinical received an email invitation from their clinical instructor to complete the survey by clicking a link included in the email. Students were asked to identify the school attended, but otherwise no identifying data were collected. Participation was voluntary. Among the Trinity students, 13 of 20 students completed the survey, for a response rate of 65%. Among the UDC students, 26 of 27 students completed the survey, for a response rate of 96%. The overall response rate was 83% (39/47).

Across schools, students were present at the dining site an average of 3 days. The range was 1 to 4 days, with most (69%) attending 4 days. All students took blood pressures and most provided health coaching (95%) and group education (87%). About half the students participated in a walking activity with meal program participants (51%) and provided medication review (49%).

See Table 14 (page 21) for results by school and total.

Table 14. Nursing student attendance and type activities provided, total and by school, ageWELL Pilot Study, Spring 2023

	Total N = 39	Trinity * n = 13	UDC * n = 26
Days attended: Mean (SD)	3.4 (1.1)	3.0 (1.4)	3.5 (.9)
One day	6	4	2
Two days	1	---	1
Three days	5	---	5
Four days	27	9	18
Blood pressure checks	100%	100%	100%
Health counseling	95%	100%	92%
Group education	87%	100%	81%
Walking activity	51%	54%	50%
Medication Review	49%	46%	50%

* Trinity = Trinity Washington University School of Nursing and Health Professions; UDC = University of the District of Columbia

Evaluating a clinical experience from the nursing student perspective provides insight into the content learned and the potential of the experience to influence future nursing practice. In the case of the ageWELL program, the experience is especially relevant for the nursing care of older adults. Students were asked to respond to seven questions and indicate agreement using a 5-point Likert scale, with response options: strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.

Across schools, almost all students (97%) strongly agreed/agreed that as a result of the experience they had a better understanding of the health needs of community-residing older adults and the barriers to care older adults experience. Similarly, almost all strongly agreed/agreed that the experience contributed to a better understanding of chronic disease management (98%), as well as improved their ability to provide counseling about lifestyle practices (95%). Following the clinical experience, most strongly agreed/agreed they were more comfortable interacting with older adults (90%) and recognized older adults as engaged and interactive in their care (89%). Almost all (95%) strongly agreed/agreed they improved their communication skills as a consequence of the experience.

See Table 15 (page 22) for results by school and total.

In May 2023, following the completion of the community clinical, the study PI convened a **debriefing meeting** with lead agency staff, nursing program directors and nursing faculty who were onsite with students to review program implementation. Across sites, nursing faculty felt students met learning objectives for the community clinical and were interested in continuing nursing student placement at the dining sites in the future. Lead agency staff at both sites confirmed their interest in continuing the collaboration and student engagement with meal program participants to deliver the ageWELL program.

Table 15. Nursing students' evaluation of the community-based clinical experience with older adults, total and by school, ageWELL pilot study, May 2023

Participation in this community-based clinical experience with older adults helped me to … [1]	Total N=39	Trinity n=13	UDC n=26
Better understand health needs of older adults living in the community.			
Strongly Agree	77%	77%	77%
Agree	20%	15%	23%
Neither Agree/Disagree	3%	8%	---
Improve my communication skills.			
Strongly Agree	69%	77%	65%
Agree	26%	15%	31%
Neither Agree/Disagree	5%	8%	4%
Feel more comfortable interacting with older adults.			
Strongly Agree	75%	77%	73%
Agree	15%	8%	19%
Neither Agree/Disagree	10%	15%	8%
See how engaged and interactive older adults are.			
Strongly Agree	74%	85%	69%
Agree	15%	8%	19%
Neither Agree/Disagree	10%	8%	12%
Better understand importance of chronic disease management to prevent major health events.			
Strongly Agree	72%	69%	73%
Agree	26%	23%	27%
Neither Agree/Disagree	3%	8%	---
Better understand barriers to care experienced by older adults.			
Strongly Agree	69%	69%	69%
Agree	28%	23%	31%
Neither Agree/Disagree	3%	8%	---
Improve my ability to provide counseling regarding lifestyle practices, such as diet and physical activity.			
Strongly Agree	72%	77%	69%
Agree	23%	8%	31%
Neither Agree/Disagree	5%	15%	---

* Trinity = Trinity Washington University School of Nursing and Health Professions; UDC = University of the District of Columbia

** 5-point Likert scale = strongly agree/agree/neither agree nor disagree/disagree/strongly disagree. There were no disagree or strongly disagree responses.

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

The two-group randomized controlled trial study design allowed a comparison of health outcomes between the usual program group and the usual program + ageWELL group, before and after implementation of the ageWELL program. The outcomes assessed included systolic and diastolic blood pressure, BMI, physical activity (aerobic), strengthening and flexibility activities, and self-rated health.

Inclusion of meal program participant data in the analysis models required the participant to complete measurement at both baseline and follow up. The sample sizes varied by model due to missing data. See Table 16, page 24 for results.

Additional detail about analyses is available on request.

There were no significant differences between the two groups for any of the outcomes assessed. For most, change was minimal or there was no change seen. This was not unexpected given the small sample size. The length of the program and short time frame between baseline and follow up measurement also likely contributed to the absence of significant differences when comparing outcomes and groups.

Of note, the change within groups in systolic blood pressure before and after implementation of the ageWELL program and the difference when comparing groups merits mention. For the usual program + ageWELL group, the mean systolic blood pressure decreased by 7.2 mm Hg compared to a mean decrease in the usual program group of only 1.3 mm Hg. The between group difference of a 5.9 mm Hg decrease, favored the usual program + ageWELL group. See Figure 2.

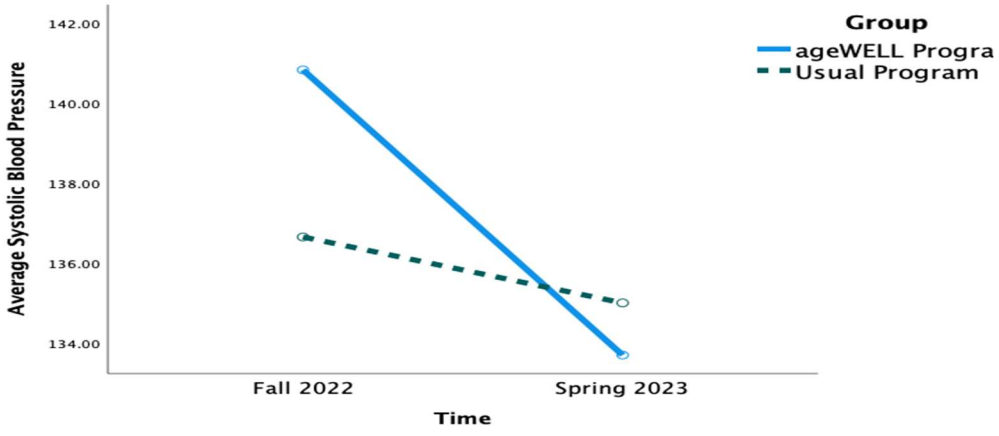

Figure 2. Change in systolic blood pressure by group from Fall (baseline) 2022 to Spring (follow up) 2023, ageWELL pilot study, Fall 2022 and Spring 2023.

Table 16. Select health-related outcomes following the 3-month ageWELL program by group, ageWELL Pilot Study, 2022-2023 [1]

Outcome Variable	No. in group	Baseline M(SD)	Follow Up M(SD)	Within Group Change	Between Group Difference	*P*
Systolic BP mm Hg						
ageWELL program	68	140.8 (19.5)	133.6 (21.3)	-7.2	-5.9	0.49
Usual program	117	136.7 (19.6)	135.4 (19.5)	-1.3		
Diastolic BP mm Hg						
ageWELL program	68	68.7 (9.8)	70.4 (11.3)	1.7	2.5	0.61
Usual program	117	71.1 (11.2)	70.3 (11.5)	-0.8		
BMI kg/m^2						
ageWELL program	67	30.1 (6.5)	30.2 (6.7)	0.1	0.2	0.85
Usual program	112	30.7 (7.2)	30.6 (6.8)	-0.1		
Aerobic activity [2]						
ageWELL program	69	4.9 (1.6)	5.08 (2.1)	0.18	0.49	0.95
Usual program	117	5.3 (1.7)	4.99 (1.8)	-0.31		
Strengthening & Flexibility [3]						
ageWELL program	68	1.0 (0.81)	1.1 (0.80)	0.1	0.1	0.98
Usual program	117	1.1 (0.83)	1.1 (0.85)	0.0		
Self-rated health [4]						
ageWELL program	69	2.9 (0.9)	2.9 (0.8)	0.0	0.0	0.89
Usual program	116	2.9 (0.9)	2.9 (0.8)	0.0		

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, sex (M/F) and education (<=HS/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

9. Conclusions and Recommendations

The ageWELL pilot study represented the successful collaboration of partners across multiple sectors that included one government agency, one national foundation, four local community-based nonprofit agencies, three universities and residents from five of the district's eight wards. Study deliverables included the following,

- Development and implementation of the ageWELL program;
- Evaluation of the feasibility and acceptability of the ageWELL program;
- Evaluation of the effect of the program on select health outcomes;
- Evaluation of the academic practice partnership and the experience of nursing students implementing the ageWELL program;
- Description of a sample of older adults who use the congregate meal program.

The results presented in this report provide proof of concept of the practical potential of the ageWELL program. The pilot study demonstrated feasibility and acceptability of an academic practice partnership model that engaged nursing schools to bring nursing students to congregate dining sites to provide older adults health, wellness and disease management programming. Service counts showed that program participants regularly attended programming, especially the one-on-one visits for blood pressure checks and health coaching. Nutrition education and medication review were also popular activities. Survey data indicated participants found the programming helped improve their understanding of high blood pressure and helped them to improve their diet and be more physically active. Overall, satisfaction with the ageWELL program and nursing student engagement was high among the ageWELL program participants.

The nursing student experience is also an aspect of feasibility and acceptability and key to program sustainability. The service counts indicate students were both engaged and productive during their time at the dining sites, with all taking blood pressures, most providing health counseling and group education and about half providing medication review. For most, the experience improved their understanding of the health needs of community-residing older adults, the barriers to care faced by many older adults and the importance of chronic disease management to prevent major health events. Most also reported improvement in communication and counseling skills, which are foundational to nursing practice. Importantly, the academic practice partnership model with nursing schools is replicable and scalable. Prelicensure nursing programs are required to provide supervised learning opportunities for students in a variety of settings and populations. Community-based dining sites that provide the congregate meal program to an older adult population are an untapped clinical resource for nursing programs.

Although feasibility and acceptability of the ageWELL program was supported, the study was not powered (lacked an adequate sample size) to detect differences in health outcomes between groups, even if differences were present. Nevertheless, the decrease in systolic blood pressure seen after program implementation of 5.9 mm Hg, which favored the ageWELL program participants compared to older adults in the usual programming group is promising and merits further consideration. A randomized controlled trial (RCT) adequately powered (a sufficient sample size) to detect a difference in systolic blood pressure is needed to determine the effectiveness of the ageWELL program to lower blood pressure. Notably, the pilot study confirmed the feasibility and acceptability of conducting an RCT in the congregate meal setting and recruiting and retaining a diverse older adult population to participate in trial activities..

Also included in the ageWELL study was a measurement sample of meal program participants. This data provides valuable insight into the health and wellness needs of older adults in the district who access dining sites and the congregate meal program. Most were burdened by multiple chronic conditions and would benefit from more tailored programming that targets self-management of chronic disease conditions. For most, this included hypertension plus some combination of high cholesterol, arthritis and diabetes. In particular, a focus on hypertension and strategies to improve blood pressure control is indicated. Providing greater access to physical activity opportunities, is one strategy

to improve blood pressure control. The lower percentage of participants from public housing sites who met physical activity goals as compared to participants from senior wellness center and recreation center sites, suggest access to space, equipment and a variety of physical activity programs could make a difference between a more active and less active lifestyle for many older adults. Public housing site participants also reported higher rates of taking six or more medications daily and reporting self-rated health as fair or poor than participants from senior wellness center and recreation center sites. Availability and accessibility to health and wellness services for older adults living in public housing sites merits further review.

The measurement of meal program participants also included an assessment of food program use over a six month period. Use of the congregate meal program, SNAP and the Senior Farmers Market Program was generally stable. Notable exceptions included a doubling in the percent of the sample rating the congregate meals as poor, increasing from 11% at baseline to 22% at follow up. At the same time, more older adults at follow up than baseline reported eating a meal less often in the prior three months (32% versus 23%, respectively) and indicating they would not recommend the meal program to others (32% versus 22%, respectively). Further exploration of these findings is merited. SNAP and the Senior Farmers Market Program were similarly popular but only used by about one-third of the sample. Food insecurity among the sample remained stable over the six month measurement period at 10%. 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 is recommended.

In conclusion, the ageWELL DC pilot study supports proof of concept and the feasibility, acceptability and potential of an academic practice partnership model that engaged local nursing schools to bring nursing students to congregate dining sites to provide programming to older adults that improves self-management of health, wellness and chronic conditions. The pilot study also provides evidence that supports the need for the ageWELL program and potential health benefits to meal program participants. The ageWELL measurement sample found that most participants were burdened with multiple chronic conditions, particularly uncontrolled systolic hypertension and obesity. Our findings mirror data reported in the recently published DC Health Framework for Improving Community Health that identified high systolic blood pressure as the leading cause of the greatest number of deaths among DC residents in 2019, with the third leading cause of death, high body mass index (21).

Continuing the academic practice partnership with nursing schools to deliver the ageWELL program at neighborhood dining sites that offer the congregate meal program is one approach to improve the health and well-being of a population of older DC residents whose numbers are growing and whose health needs are similarly increasing.

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