Urban Heartbeat: Hypertension Awareness for Older Adults

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The author has no known conflicts of interest to disclose.

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Abstract

Hypertension (HTN) remains a prevalent chronic condition among older adults (OAs), necessitating comprehensive strategies to enhance health literacy (HL) and treatment adherence. The project implemented a six-week community-based health education program (CBHEP) at an adult recreation center in East Valley, Arizona, from October 18 to November 26, 2025. Guided by the Health Literate Care (HLC) model, the intervention's theoretical framework focused on HTN self-management through structured education, self-monitoring blood pressure (SMBP) workshops, and provider-patient communication strategies. The Plan-Do-Study-Act (PDSA) cycle served as the implementation framework to optimize program delivery. Seven participants aged 65 and older diagnosed with HTN were enrolled following expedited approval from the Arizona State University (ASU) Institutional Review Board (IRB). Primary outcomes assessed compliance with HTN therapy using the Hill-Bone Compliance to High Blood Pressure Therapy (H-BCHBPT) scale. Secondary outcomes analyzed blood pressure (BP) trends over time. Descriptive statistics, frequencies, and paired t-tests revealed no statistically significant difference in compliance between pre- and post-intervention (p = .730), with a small effect size (d = 0.14). However, BP trends demonstrated a gradual decline, suggesting improved BP management. This study supports health literacy-focused, community-based interventions as viable strategies for HTN management in OAs. Strong participant engagement and program feasibility were notable strengths, while recruitment and small sample size posed challenges. Future research should scale the intervention with larger cohorts, enhance retention strategies, and extend follow-up to assess long-term impact.

Keywords: hypertension, older adults, health literacy, tailored education, blood pressure control

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Background and Significance

As the global population ages, it is crucial to prioritize the healthcare needs of OAs to ensure a healthy aging process and enable them to remain active contributors to society. HTN poses a significant threat to this demographic, affecting millions worldwide and leading to serious health complications such as cerebrovascular events, cardiovascular disease, and chronic kidney disease. Despite advancements in medical knowledge and treatment options, HTN remains a significant public health challenge, especially for the OA population. Age-related decline in HL is linked to cognitive and physical deterioration, lack of social and economic support, and the presence of chronic diseases, making it challenging for OAs with HTN to comprehend and effectively manage their condition (Kilic et al., 2023; Uemura et al., 2021). Low HL is associated with poor self-management and a diminished quality of life, hindering OAs' ability to grasp crucial health information and adhere to HTN management strategies (Ampofo et al., 2020; Ongkulna et al., 2022). Ultimately, low HL status leads to suboptimal health outcomes, resulting in increased healthcare costs. To address this healthcare gap, the CBHEP holds promise in enhancing HL and HTN management adherence among OAs. A CBHEP centered on empowerment, inclusivity, community engagement, and the utilization of local resources and strengths, can lead to meaningful improvements in health outcomes and overall quality of life for hypertensive OAs.

Epidemiological data

The global incidence of HTN represents a significant public health issue, impacting millions across various demographics. A comprehensive study by Leszczak et al. (2024) suggested that an estimated 1.13 to 1.27 billion individuals aged 30 to 79 suffer from HTN.

Notably, the condition appears to be more prevalent among men, with prevalence rates ranging from 24% to 32%, as opposed to 20% to 34% in women, according to diverse studies by Bager et al. (2023), Gavrilova et al. (2019), Kurt & Gurdogan (2022), and Leszczak et al. (2024). Despite these figures, primary care data from industrialized countries reveal a higher diagnosis rate of HTN among women, particularly within the 52-58% range (Bager et al., 2023).

In the context of the United States, the National Health and Nutrition Examination Survey highlighted that 70% of OAs over 65 years of age are diagnosed with HTN (Leszczak et al., 2024). Regional health assessments, such as the 2019 Maricopa County Coordinated Community Health Needs Assessment and the Arizona Department of Health Services' 2019 Burden Report on Heart Disease and Stroke, underscored that Maricopa County reports a slightly lower HTN prevalence among adults at 30.7%, compared to Arizona's 32.3% and the national average (Sandoval-Rosario et al., 2019; Ward et al., 2020).

Furthermore, the 2017 Arizona Behavioral Risk Factor Surveillance System identified a correlation between HTN and increased mortality from heart disease and stroke in Pinal County at 15 per 100,000 persons and Maricopa County at 14.1 per 100,000 persons (Sandoval-Rosario et al., 2019). The study by Uemura et al. (2021) highlighted the critical issue of low HL among OAs, which complicates the management of chronic conditions like HTN. Low HL is associated with increased risks of frailty, arterial stiffness, and functional decline among this demographic (Uemura et al., 2021). Addressing the challenges posed by low HL in the effective management of HTN is crucial for enhancing health outcomes among OAs. Improving HL levels is posited as a strategic approach to ameliorating the overall health status of individuals grappling with HTN.

Hypertension Health Promotion Initiatives

National Initiatives

CDCs Million Hearts®

The HTN Control Change Package (HCCP) of the *Million Hearts®* initiative, developed by the Centers for Disease Control and Prevention and published in 2015, has been widely utilized to guide HTN improvement programs in health centers and clinics nationwide (Wall et al., 2020). The 2020 HCCP second edition expanded the package to include networking with *Million Hearts®* HTN control champions, SMBP- focused content with additional tools and resources, tools for identifying patients with potentially undiagnosed HTN, and new strategies focusing on chronic kidney disease testing and identification (CDC, 2023).

The HCCP is structured into four main categories: essential foundations, equipping care teams through training, population health management, and individual patient support. Successful implementation of the HCCP requires assembling multidisciplinary teams, ranging from immediate patient care staff to quality improvement and administrative leadership. The HCCP follows the PDSA cycle (see Appendix C, Figure 2). The program entails discussing the aspects of HTN control in need of improvement, identifying and selecting corresponding interventions, conducting small-scale testing for feasibility, evaluating the testing, and adjusting before implementing changes on a larger and more permanent scale, because only some strategies may be suitable for some clinical settings, so small-scale testing is highly recommended for each healthcare setting (CDC, 2023).

Target BP National Initiative

Target BP™ represents a national initiative established by the American Heart Association and the American Medical Association in response to the widespread issue of

uncontrolled blood pressure. *Target BP*™ is supporting healthcare organizations and communities in improving BP control rates through evidence-based HTN resources. These resources focus on the diagnosis, treatment, and management of HTN, including a program to support BP improvement, the latest guideline recommendations, the utilization of SMBP monitoring, and educational tools and practical resources for clinical staff to enhance patient care for HTN (American Heart Association & American Medical Association, n.d.).

Local Initiatives

The *Million's Hearts*® initiative by the CDC has established networks of HTN control champions across the United States. In Arizona, there are two health clinics certified as HCCP: Med-Cure Internal Medicine, Plc, Goodyear, which received certification in 2020, and El Rio Southwest Internal Medicine, Tucson, which was certified in 2023 (CDC, 2023). These healthcare centers prioritized BP control and achieved improved performance by implementing effective strategies shared in the HCCP. In addition to the *Million Hearts*® initiative, Arizona is home to several locally founded HTN programs, including the *Southern AZ HTN Collaborative* in Cochise, Santa Cruz, and Pima County, the Arizona Department of Health Services' *Heart Disease and Stroke Prevention Program, ASHLine, and the Check Change and Control Tracker* free online tool for BP monitoring (Christ, 2017). The Mission of Mercy's *A Heart for Preventing HTN* program at the Avondale Clinic was granted federal funding for 100 units of BP devices for SMBP and other incentives such as grocery gift cards to increase compliance, aligning with the goals of the *Target BP*™ program (Mission of Mercy, n. d.).

Internal Evidence

The project site, a local adult recreation center located near Arizona State University, a city museum, and a nonprofit hospital specializing in trauma care, serves an essential role in the

community. Funded by the city government, it serves adults aged 18 and above but primarily attracts OAs, with most participants being 65 or older. The center focuses on fitness and socialization programs for OAs, offering a variety of activities, including fitness classes, social connection groups, and educational offerings. Previously, health education at the center covered diabetes, fall injury prevention, and advanced health directives, with classes delivered by health clinics and academic institutions. Participants can register for weekly courses online, with content adapted based on direct feedback or observations by administrative staff.

During a fieldwork meeting attended by 20 OAs in November 2023, several health-related issues were raised, including HTN management, mental health concerns, pain management, and a general lack of access to medical wellness services. The main problem identified was a need for more health education from healthcare providers. A CBHEP focusing on HTN was proposed to address low HL regarding HTN self-management. The health education classes, crucial for addressing these concerns, are offered based on instructor availability, with recent sessions focusing on diabetes management and fall prevention. The center also provides information sessions on Medicare benefits and technology skills, highlighting the need for more consistent instructional classes.

The site champion wants to establish quality improvement metrics to evaluate and enhance current offerings, particularly noting the lack of medical wellness services beyond general practice clinics and hospitals. The feedback received during fieldwork has highlighted the vital health challenges within the target population. The co-investigator (CI) identified the HL gap as a critical focus area, emphasizing the importance of effective health education delivery in achieving desired health and behavioral outcomes. The success of the CBHEP project

will determine the feasibility of implementing a permanent health education program to improve HL and access to care among the center's attendees.

PICOT Question

Among OAs members with HTN in an urban community center (*P*), how does the implementation of a CBHEP (*I*), compared to the current instructional classes (*C*), affect HL and subsequent HTN treatment adherence (*O*)?

Population

The OA population typically refers to individuals aged 65 and older in most developed countries and 60 years and older in most developing countries (Foroumandi et al., 2022). In Tempe, the OA population is 10.7% with the highest age concentration of 65 years to 74 years at 5.9%, and a disability rate of 10.2% (U.S. Census Bureau, 2022). The disability index comprises hearing and vision, cognitive, self-care, ambulatory, and independent living difficulties. The highest index is cognitive difficulty at 5.7% (U.S. Census Bureau, 2022). The census data indicates an aging population with a small margin of disability index at 3.8 % for the entire Arizona state and a longer lifespan, thus the reason for choosing the OAs as the target population for the project.

One prevalent health issue associated with advancing age is HTN, which continues to affect OAs without decreasing prevalence rates (Chen et al., 2020; Foroumandi et al., 2022). Successful treatment of HTN, especially among OAs, relies on treatment adherence, necessitating a sufficient level of HL to achieve positive treatment outcomes (Persell et al., 2020). Persell et al. (2020) also referenced systematic review studies that have established a causal link between low HL and poor health outcomes. Delavar et al. (2020) supported the

results from the systematic review studies by citing poor medication adherence, high emergency admission rates, prolonged treatment courses and hospital stays, and increased mortality rates.

Consequently, OAs with low HL encounter difficulties in comprehending treatment regimens, navigating healthcare systems, interpreting health information, engaging in self-management practices, and managing co-morbidities and polypharmacy. Therefore, the OA population would benefit from a tailored health education intervention.

Intervention

A CBHEP is a promising approach to improving HL among OAs with chronic health conditions, such as HTN. CBHEPs offer tailored health education outside traditional healthcare settings, allowing individuals to participate in informative and interactive workshops that cater to their specific needs. Implementing a CBHEP in a community center frequently visited by OAs would provide an opportunity to engage in educational seminars focusing on SMBP, enhancing patient-provider discussions, medication regimens, nutrition, and physical activity.

Research has shown that face-to-face interactions and printed educational materials are effective delivery methods for these interventions and can improve HL, leading to better health management (Chen et al., 2020; Delavar et al., 2020; Foroumandi et al., 2022). Several studies have demonstrated the positive impact of CBHEPs, including increased total knowledge scores, reduced BP values, improved SMBP monitoring skills, and self-efficacy behaviors (Gavrilova et al., 2019; Khanal et al., 2021; Kurt & Gurdogan, 2022; McManus et al., 2021). Improvements in health behaviors have also enhanced physical function and a sense of accomplishment in OAs. CBHEPs can improve HL, medication adherence, physical function, and mental well-being by offering tailored health education and promoting engagement in health promotion activities.

Comparison/Current State

In traditional healthcare education delivery, healthcare providers rely on formal channels, such as healthcare facilities, to impart health information to patients through patient education or counseling (Kim & Oh, 2020). One-way communication between healthcare providers and patients characterizes the traditional approach, which leads to difficulties for patients with complex health conditions in maintaining their self-care abilities (Kim & Oh, 2020). As such, there is a pressing need for more patient-centered health communication to enhance HL. Regrettably, time-regulated healthcare delivery in hospitals and clinics poses challenges for healthcare providers, particularly nurses, in providing health education and counseling to patients and their family members (Kim & Oh, 2020). The time-constraint patient-health provider clinic time is a resounding issue with the OA members at the project site, which prompted the centers' administrative staff to create instructional classes. However, the health education classes are seldom, about two to three sessions a year, which do not provide adequate and continuous learning opportunities for the OA members. In contrast, the CBHEP has adopted a grassroots strategy, where they interact with individuals within their local communities and influence existing social networks and community resources to facilitate health promotion and education initiatives. Compared with the traditional approach, CBHEPs provide a more distributed and personalized approach, thereby enabling greater cultural relevance, community participation, and sustainability.

Outcome

The desired outcomes for the CBHEP project are HL, improved treatment adherence, and better control among OAs. The initiative includes educational workshops, individual counseling sessions, and informative resources aimed at helping individuals manage HTN. Participants are

educated on the foundational knowledge of HTN, learned the correct SMBP techniques, monitored their BP, adhered to medication schedules and appointment-keeping, and followed the recommended Dietary Approaches to Stop Hypertension (DASH) diet. The goal is to promote treatment adherence through medication reminders, peer support, and behavioral coaching. Extensive research has demonstrated the positive impact of these programs, which include reduced healthcare utilization and costs associated with uncontrolled HTN (Chen et al., 2020; Delavar et al., 2020; Khanal et al., 2021; Kurt & Gurdogan, 2022; McManus et al., 2020; Persell et al., 2020; Uemura et al., 2021).

Evidence Synthesis

Research Strategy

The PICOT question guided the literature search to collect information from three distinguished databases: Cumulated Index in Nursing and Allied Health Literature (CINAHL)/EBSCOhost, PubMed, and ProQuest. These databases are internationally recognized for their rigorous scientific information collection and significant contributions to science, technology, and medicine.

Keyword Selection

The keywords for the *population* search included older adults, aged 65 years and older, and older adults. The *intervention* search included community-based education programs, health workshops, and instructional classes. *Outcomes* key terms used are health literacy, health knowledge, hypertension, high blood pressure, treatment adherence, and medication adherence. Searches from all three databases yielded 24,425 results. A rigorous database search and application of the search limiters narrowed it down to 48 articles with the utmost relevance to the PICOT question.

Initial and Final Search Yields

Using the above-mentioned keywords in the ProQuest database search yielded 1,109 results. Applying search limiters to the document type (*observational study, systematic review (SR), randomized-controlled trial (RCT), meta-analysis, and clinical trial*), subjects (age: > 65 years, 80 years and above, humans, HTN, blood pressure, and treatment compliance), and language led to 166 relevant results. To further narrow down the relevant results, a secondary search was performed using the exact keywords and applying the Boolean operators such as *OR* to *AND* in front of the keyword *hypertension* revealed 103 pertinent results. A deeper review of 103 ProQuest articles narrowed the results to four articles with the utmost relevance. Searching the PubMed database using exact keywords, Boolean operators, and search limiters used in the secondary search in ProQuest yielded 52 significant articles. Of the 52 articles, the search narrowed to 18 articles with the utmost relevance. Similarly, the search of the CINAHL database yielded 29 articles, of which 26 articles had the highest relevance to the PICOT question.

Limitations, Inclusion, and Exclusion Criteria

The research foundation for HTN education in OAs is built on both theoretical frameworks and empirical studies. One primary theoretical foundation is the health literate (HLC) model (see Appendix B, Figure 1) by Koh et al. (2013), which focuses on improving HL through clear communication and tailored information, empowering patients, especially OAs, to manage chronic conditions like HTN. The HLC model is central to the CBHEP design in addressing HTN literacy and treatment adherence.

Empirical evidence from studies such as Chen et al. (2020) supports using health education interventions to control BP in OAs. Chen's SR and meta-analysis demonstrated that educational programs significantly reduced systolic BP (SBP) and diastolic BP (DBP) through

regular health education sessions. Similarly, Delavar et al. (2020) found that tailored self-management education improves medication adherence and BP control in OA patients with HTN, reinforcing the need for targeted educational programs. Additionally, Foroumandi et al. (2022) reported that self-management programs effectively control BP and cardiovascular risk factors, highlighting the value of educational interventions in helping OAs manage HTN.

The practical implementation of the CBHEP is guided by the model for improvement framework, which includes the PDSA cycle to facilitate ongoing evaluation and refinement. The model for improvement framework is successful in other health interventions in monitoring and adjusting strategies for better health outcomes. Supporting literature from studies like Kurt & Gurdogan (2022) and McManus et al. (2021) further validate the positive impact of education on HTN self-management, HL, and treatment adherence. These studies emphasize how continuous education improves BP control and empowers OAs to self-monitor and adhere to medication regimens.

Evidence Influence on the DNP Project

The evidence significantly impacted the development and implementation of the DNP project, which targets a CBHEP for OAs with HTN. The project's foundation is the HLC model by Koh et al. (2013), highlighting literacy's HL crucial role in chronic condition management, including HTN. Clear communication and health information tailored to patients' literacy levels has been shown to improve health outcomes, guiding the program's focus on enhancing OAs' HTN adults' teaching and management capabilities through medication adherence and lifestyle modifications.

As seen in studies by Chen et al. (2020) and Delavar et al. (2020), empirical support for health education interventions has directly shaped the project's session structure. The studies

provided evidence that regular health education can significantly lower BP and bolster medication adherence, underpinning the inclusion of interactive workshops to engage participants in HTN management and self-monitoring practices. Additionally, the project integrates self-management strategies, influenced by research like Foroumandi et al. (2022), demonstrating self-management programs' role in BP control and cardiovascular risk reduction, which led to incorporating SMBP workshops, providing participants with validated BP devices and log sheets for home use, thereby empowering OAs to monitor and manage their BP independently.

The adoption of the model for improvement framework, featuring the PDSA cycle, is based on evidence underscoring the significance of continuous evaluation and adaptation in health education interventions. The CDC's *Million Hearts*® HCCP and other process improvement initiatives have reinforced the necessity for a flexible, data-driven approach to refining educational strategies and maximizing the impact on HL and treatment adherence.

Lastly, the project's weekly education sessions tailored for OAs are supported by evidence through the research study by Kurt & Gurdogan (2022) and McManus et al. (2021), which emphasized continuous education and self-management support in HTN control among the OA demographic. These studies highlight sustained engagement and personalized educational content in securing positive health outcomes for OAs.

Critical Appraisal and Evidence Synthesis

Melnyk and Fineout-Overholt’s (2023) rapid critical appraisal checklist evaluates the quality, robustness, and applicability of study designs. The chosen articles which provided evidentiary support for the CBHEP project were presented using rapid critical appraisal (see Appendix A, Tables 1A, 1B, & 1C) had overall high quality and robustness, with most being

RCTs, longer study durations, sufficient sample sizes, and validated measurement tools. The sampling data for most studies used a randomization process for participant allocation between the interventional and control groups. The sample's demographic characteristics included individuals aged 65 and older, an insignificant gender profile, diagnosed chronic HTN, and low HL. The study settings showed heterogeneity, as all studies were conducted in various outpatient clinical settings in rural and suburban communities, with a global scope. Six of ten articles used self-management behavior and education as interventions, introduced through group classes, didactic, and workshops, to assess the effectiveness of tailored health education approaches in community-based settings. Despite the studies' various cultural and global insights, the overall results were favorable toward the effectiveness of CBHEPs in improving HL and HTN treatment adherence. Only one out of ten studies explicitly used a theoretical framework, the Pender's health promotion model to identify factors associated with OAs' participation in CBHEP activities (Chen & Hsieh, 2021). All studies demonstrated the significant impact of CBHEPs, focusing on tailored education to improve HL and HTN treatment adherence.

Purpose of the Project

Implementing a CBHEP for OAs with HTN will equip them with the necessary knowledge and skills to effectively manage their condition and improve overall health outcomes. By catering to the specific needs of this vulnerable population, the CBHEP aims to empower individuals to make informed decisions about their health, comprehend the importance of medication adherence, adopt healthy lifestyle behaviors, and recognize signs of complications. The program endeavors to bridge gaps in HL, promote self-efficacy, and ultimately alleviate the community's burden of HTN-related morbidity and mortality through targeted educational interventions such as workshops, informational materials, and interactive sessions. The purpose

of the project and intended purpose are presented using a logic model (see Appendix I, Table 3). By addressing a pertinent public health concern, the program underscores the significance of proactive health promotion and disease prevention strategies tailored to the unique needs of OAs in urban areas.

DNP Project Framework

Theoretical Framework

Health Literacy Care Model

The healthcare literate care (HLC) model (see Appendix B, Figure 1) served as the guiding framework for the project development. The HLC, developed by Koh et al. (2013), aimed to enhance the understanding and application of HL principles within healthcare systems. The HLC model emphasizes the three main components that are crucial for enhancing HL: the *patient*, the *healthcare provider*, and the *healthcare system*. The model is aimed at enriching patient comprehension, involvement, and healthcare decision-making, ultimately resulting in better health outcomes and quality of care (Koh et al., 2013). The model emphasized the importance of tailoring health information to match patients' literacy levels and cultural backgrounds, training healthcare providers to communicate effectively with patients across different literacy levels and cultural backgrounds, and implementing strategies that encourage clear communication, patient empowerment, and fair access to health services within healthcare systems (Koh et al., 2013). To successfully tackle the pervasive issue of HN among OAs in urban communities, it is imperative to bridge the gap between knowledge and action—empowering individuals through education and support to reclaim control over their health and lives.

The HLC model implemented in a CBHEP for OAs with HTN shows promise in improving understanding of health information and adherence to treatment. The model highlighted the important role of community health program administrators and stakeholders in addressing the needs of OAs with HTN. The model provided a structured framework for effective health communication and patient engagement through personalized and understandable health information. Using the HLC model, participants can become more empowered and engaged in making decisions about their health, leading to better health outcomes and an enhanced quality of life for OA with high BP.

Implementation Framework

Model for Improvement

The model for improvement framework (see Appendix C, Figure 2) developed by Associates in Process Improvement is based on the book *The Improvement Guide: A Practical Approach to Enhancing Organization Performance* (Langley et al., 2009). The Institute for Healthcare Improvement (IHI) adopted the model for improvement as a simple, effective framework for expediting improvement. The model encompasses fundamental questions that steer improvements and the PDSA cycle (IHI, n.d.). The model guided the implementation of the CDCs *Million Hearts® HCCP*, which listed the process improvements that outpatient clinical settings can implement to control HTN (Wall et al., 2020). The model guided the implementation of the CBHEP. One of the model's key strengths is its adaptability to different changing models, making it versatile for various projects (IHI, n.d.). The model for improvement consisted of three fundamental questions that will be instrumental in setting aims and a PDSA cycle (see Appendix C, Figure 2) to test and adjust changes for progress toward improvement (IHI, n.d.).

Implementing the CBHEP project using the model for improvement framework involved a systematic approach to achieving desired outcomes in a community setting. The plan started with answering three key questions of the framework, beginning with setting specific aims to enhance HL and HTN treatment adherence among OAs with HTN, targeting a small-scale group of up to 30 individuals over six weeks. The H-BCHBPT scale (see Appendix D, Figure 3), developed by Kim et al., 2020, measured the primary outcome key metrics such as the *compliance with HTN therapy* to track improvements from baseline data. BP control as the secondary outcome shown through the *average BP trends over time,* linking the primary outcome of improved HL and treatment adherence. Immediate stakeholders, including project participants and site administrative staff, identified the potential changes in the health education content and delivery methods for revision to achieve the desired outcomes.

The PDSA cycle (see Appendix C, Figure 2) tested small changes based on specific criteria, with data collected during testing and stakeholder feedback used to evaluate the intervention's impact. Immediate stakeholders evaluated the interventions during the implementation phase. Over the six-week period, the project organizer conducted a health education delivery assessment on Week 6 of project implementation, serving as a foundation for necessary revisions in preparation for the sustainability planning. Establishing a standard education delivery model for future sustainable CBHEP depends on the final post-implementation evaluation. Administrative staff oversaw the participants' attendance as a project requirement for the center's instructional programs. The co-investigator (CI) ensured that the project site's administrative staff are constantly updated of the class progress throughout the implementation period. The PDSA approach fosters a culture of continuous improvement and collaboration within the community and provides a framework for a future full-scale adaptation

and spread of improvement changes across other adult recreation centers and non-profit organizations offering health education classes frequented by OA members.

Methods

Ethical Considerations

The ethical considerations in CBHEP involve adhering to principles of *respect for persons*, *beneficence*, and *justice*, ensuring voluntary participation, transparency, confidentiality, and safeguarding participants from harm. *Respect for persons* includes protecting the autonomy of research participants and ensuring the safety of individuals with reduced autonomy (Barrow et al., 2022). *Human subject protection* was achieved through protocols such as informed consent, anonymity, and data privacy throughout the project implementation. The *eligibility survey questionnaire* (see Appendix F, Figure 5B) contained information on single demographic data such as gender, inclusion and exclusion criteria, and participant project expectations. The *written informed consent* (see Appendix F, Figure 5C) includes provided specifics of the project, such as the respect of participants' rights to privacy and confidentiality, voluntary participation, freedom to withdraw from participation during the implementation period without loss of benefits and entitlement of the learning materials provided.

Beneficence entails respecting individuals' choices, safeguarding them from harm, and actively promoting their well-being (Barrow et al., 2022). The project upheld the *beneficence* principle through diligent avoidance of harm and safeguarded the welfare and benefits of the patients throughout the project's execution through secured acquisition of personal data, data storage, and destruction of the pertinent project data containing personal information after the project implementation. The principle of *justice* emphasizes fair treatment and privacy for research participants (Barrow et al. (2022). It requires unbiased participant selection, fair

treatment, and shared information confidentiality. The project adhered to the principle of *justice* through the implementation of anonymity and confidentiality protocols of shared information. Project data access is only accessible by the primary investigator (PI) and the CI.

The CBHEP project has a significantly low risk of harm to no harm at all. The project socio-behavioral protocol was submitted to the ASU IRB, ensuring that the project process meets the ethical standards and upholds the participants' rights throughout the project. The IRB granted the CI their expedited approval (see Appendix E, Figure 4) to proceed with the project implementation after extensive review of the required documents.

Project Setting and Participants

The local adult recreation center in East Valley in Arizona operated as the project site for the CBHEP project. The project participants consisted of OAs 65 and older, diagnosed with HTN, cared for by a healthcare practitioner, prescribed with antihypertensive medications or lifestyle modifications, physically capable of performing workshops, with intact cognition, and English speakers. The participants came from diverse socioeconomic backgrounds. However, they shared a common characteristic of needing support in managing their BP. The project site is an adult recreation center which provides a spacious, convenient environment where participants can engage comfortably in fitness classes, group activities, discussions, and instructional classes designed to improve their social connection, physical, and mental well-being. The center was chosen as best suited for the CBHEP project implementation due to its high number of OA members participating in the programs.

Project Description and Timeline

The project implementation launched on September 18, 2024, for the recruitment phase. The instructional classes and workshop commenced on October 15, 2024, which included

procurement of the consent to participate, pre-survey compliance to HTN therapy and baseline BP gathering, and didactic delivery of the first topic about HTN basics. Planned educational topics for each session included HTN basics, SMBP workshop, medication adherence, low-sodium and DASH diet, and appointment- keeping classes. The H-BCHBPT scale questionnaire guided the chosen health topics. The project was scheduled for six weeks, from October 15, 2024, to November 29, 2024, leaving November 5 as an off day due to the national election. The classes were scheduled on Tuesdays for two hours, once a week.

Data Collection Plan

Recruitment and Eligibility

The CI performed the recruitment and obtained the consent of the participants, and the PI served as the project mentor who provided guidance and assistance throughout the project from development until completion. The CI developed the recruitment flyer containing information on the project aims, participants' eligibility criteria, participation requirements, potential benefits of engagement, and assurance of information privacy and participant confidentiality. The recruitment period began on September 18, 2024, after receiving the expedited ASU IRB approval. The recruitment was held at the project site and included the distribution of the recruitment flyer and participant eligibility questionnaire (see Appendix F, Figures 5A, 5B) to OAs that visited the project site. Due to time constraints and conflicting schedules of the attendees, the recruitment was extended to another seven days. The recruitment flyers, project information posters, and a secured lock drop box for the responses remained at the project site during the extended recruitment days. The flyers were collected at the end of the seven-day period. There were about nine responses received.

Pre-intervention

The data collection plan involved a pre-intervention gathering of consent of the project participants conducted by the CI using a written consent form (see Appendix F, Figure 5C) distributed to the participants on October 15, 2024, the first day of the implementation period. The baseline data related to *compliance with HTN therapy* for the primary outcome and baseline BP measurement for the secondary outcome depict BP control. The H-BCHBPT scale by Kim et al. (2000) served as the instrument for the primary outcome. The H-BCHBPT scale pre-survey questionnaire (see Appendix G, Table 2A) assessed the participant's baseline compliance with HTN treatment behaviors. The H-BCHBPT scale is a 14- item scale and consists of three behavioral domains: *medication adherence* (nine items), *sodium-intake* (three items), and *appointment-keeping practices* (three items), utilizing a four-point Likert scale for each item (Kim et al., 2000). The BP measurement values gathered information about each participant's baseline measurement for BP control presented as an average BP trend over five weeks. The weekly BP log sheet was used to obtain weekly BP averages for the secondary outcome. Upper arm cuff BP devices were provided onsite for participants to use throughout the duration of the project.

Post-intervention

The CI conducted the post- intervention data collection at the project site in the sixth week on November 29, 2024. The data collection was achieved through the distribution of the post-intervention H-BCHBPT survey and collection of the BP log sheets. The health education delivery survey (see Appendix G, Table 2B) was distributed to evaluate the project outcome for the participant satisfaction and effectiveness of the education delivery. The post-intervention evaluation of the education delivery consisted of a qualitative feedback survey regarding

participants' perceptions of the program's effectiveness. The quantitative data derived from the BP log sheets (see Appendix H, Figure 6) evaluated the *average BP trends over time,* demonstrating improvements in BP control. The collected data included both quantitative measures of treatment compliance and BP control and qualitative insights into participant experiences.

Data Analysis

The CI conducted the data analysis and reviewed remotely all the feedback data received and collated. The PI reviewed the collated data, the data analysis results and provided feedback. The data analysis plan involved both quantitative and qualitative approaches. Descriptive statistics and frequencies were used to analyze the averages of the demographic variables. Inferential statistics using the paired sample *t*-test were used to analyze the primary outcome to demonstrate statistical significance and difference between the *mean* score of the *pre- and post-compliance with HTN therapy*. The analysis of the *average BP trends over time* is distributed over a five-week period which will be utilized as the secondary outcome. Weekly average BP values were used for the data interpretation. The *Intellectus* statistical software provided by ASU processed the collected project data.

The CI conducted the adjustments and refinement of the DNP project remotely. The adjusted and revised version of the DNP project was submitted to the PI for review. The CI presented the revised and finalized data for dissemination to the project site. The sustainability planning was presented to the project site administrative staff. Following the site presentation, the initial phase of the sustainability planning begins by submitting a request for long-term implementation of the CBHEP to the city's human health services department.

Budget and Funding

The CI mainly provided the project funding, while ASU was responsible for covering the statistical software and salaries of the PI and the statistical consultant. The city allocated an annual budget for the operational and administrative costs of the project site. The site champion confirmed that no cost is invoiced to the CI for facility use and participant fee during the execution of the project. However, the CI funded the cost of the validated BP devices for the SMBP, some non-government-funded health education materials, and the refreshments provided during class sessions. After the project, the CI awarded the BP devices to the participants.

Furthermore, the city has allocated general funding for the OA community services at the project site for the fiscal year 2023-2024, amounting to $82,860.00, tabulated as revenue in the fiscal report (Tempe, n.d.). From a fiscal perspective, by implementing the CBHEP at the site, the city saved about $3445.00, which is the project budget cost from its OA activities' funds. Detailed operational costs are available for fiscal transparency (see Appendix J, Tables 4A, 4B).

Results

Demographic Variable Descriptive Statistics, Frequencies, and Attendance

Intellectus statistics software was used to store, manage, and analyze the data (Intellectus, 2023). The population were white older adults attending an adult recreation center (*n* = 7). The average age of the sample was 76 (*SD* = 5.42) and the ages ranged from 66 to 82 years. Most of the sample were female 4 (57%) and the remainder were male 3 (43%). Most of the samples measure their BP *daily* (86%) and one person checks their BP once a *month* (14%). A summary of the age descriptive statistics and demographic frequencies is presented in Appendix K, Table 5A, 5B. Participation attendance data (see Appendix K, Table 5C) was collected to demonstrate participant engagement. The entire sample had perfect attendance for the program during Weeks

1, 2, 3, and 5. However, Week 4 experienced a decline, with 5 attendees (71%) resulting in two participants (29%) being absent. Attendance saw a slight improvement in Week 6 with six participants present (86%), leaving one participant (14%) absent.

Primary Outcome: Compliance Behaviors with HTN Therapy

Before the intervention, participants demonstrated inconsistent with degree of variability in *medication adherence* to HTN therapy behaviors (see Appendix L, Table 6A) . *Missed doses of medication* had a low average score (*M* = 2.67, *SD* = 0.94), while other medication-related items like *planned omission* and *skipping when sick* showed perfect adherence (*M* = 4.00, *SD* = 0.00). *Sodium intake* behaviors, such as *consuming salty food* (*M* = 2.86, *SD* = 0.38) and *eating fast food* (*M* = 3.43, *SD* = 0.53), indicated moderate nonadherence. *Appointment-keeping* was mixed, with lower scores for *booking future visits* (*M* = 2.86, *SD* = 1.07) and higher for avoiding *missed appointments* (*M* = 3.86, *SD* = 0.38). The observed variability suggests statistically significant areas for improvement prior to the intervention.

After the intervention (see Appendix L, Table 6B), participants demonstrated near-perfect adherence across all subscales. *Medication adherence* scores improved significantly, with eight of nine items achieving the maximum mean score of 4.00 and no variability (*SD* = 0.00), indicating uniform compliance. The one remaining item, *missed BP medication doses*, also improved with a high average (*M* = 3.83, *SD* = 0.37). *Sodium intake* behaviors showed strong improvement, with perfect adherence on two items and near-perfect on *avoiding salty food* (*M* = 3.86, *SD* = 0.38). *Appointment-keeping* reached full adherence, with all participants reporting ideal behavior for both booking appointments and *avoiding missed visits* (*M* = 4.00, *SD* = 0.00).

Secondary Outcome: SBP and DBP trend over Time

The SBP (see Appendix M, Table 7) showed a gradual decrease from a baseline average of 131.57 mmHg (*SD* = 13.48) to 126.71 mmHg by Week 3 and Week 4, with a slight increase to 128.43 mmHg at Week 5. The minimum and maximum systolic values ranged from 115.00 to 155.00 mmHg across the weeks. The DBP also declined steadily from a baseline average of 76.29 mmHg (*SD* = 9.79) to 70.86 mmHg by Week 4, before rising slightly to 72.14 mmHg at Week 5. The range of DBP values spanned from 60.00 to 93.00 mmHg. Overall, the data suggest a downward trend in both SBP and DBP over five weeks, indicating potential improvement in BP control. These findings suggest a possible beneficial effect of the intervention on both SBP and DBP levels, although the small sample size (*n* = 7) limits generalizability and statistical power.

Impact of the Project

At the participants' level, the project reinforced the importance of regular BP monitoring and HTN treatment adherence, as participants continuously engage in self-monitoring behaviors essential for long-term HTN management. At the provider level, healthcare professionals gained valuable insights into patient adherence behaviors and potential barriers to HTN management, emphasizing the need for continued education and follow-up support. Systemically, the project demonstrated the feasibility of community-based interventions for OAs, suggesting their potential integration into primary care settings to enhance chronic disease management. At the policy level, the findings highlight the need for funding and expanding CBHEP initiatives focused on HTN management in OAs, advocating for increased access to tailored educational programs that promote patient engagement and adherence.

Sustainability of the Intervention

To sustain the intervention's impact, ongoing community workshops and educational support groups should be implemented. Healthcare providers can integrate brief educational sessions into routine visits to reinforce key messages. Additionally, leveraging digital health tools, such as remote monitoring and telehealth consultations, can further support adherence and long-term management. Continued collaboration between healthcare institutions and community organizations will be essential in maintaining and scaling the program for broader reach and impact.

Discussion

The project findings highlighted both challenges and successes in implementing a CBHEP for OAs. One notable limitation was the decline in attendance during the later weeks, particularly in Week 4 (71% attendance) and Week 6 (86% attendance). These fluctuations suggest potential barriers such as scheduling conflicts, engagement issues, or medical reasons, which may impact long-term adherence to similar programs. The pre- and post- intervention data of the interitem variables of the three behavioral domains of the *compliance behavior with HTN therapy* showed that the participants showed varying levels of adherence to HTN therapy behaviors from relatively low to strong baseline adherence. However, Post-intervention results indicate substantial improvement in HTN self-management behaviors across all domains. The uniform scores and reduced variability suggest the intervention was effective in promoting consistent medication adherence, healthy dietary choices, and appointment keeping. These findings support the value of structured education programs in enhancing treatment adherence among OAs with HTN. Additionally, while the BP trends demonstrated an overall downward trajectory, minor fluctuations in Week 5 indicated that external factors or physiological

variations may have influenced the results, warranting further investigation. However, the results showed promising beneficial effect of the intervention towards BP control. The small sample size (*n* = 7) also limits the statistical significance of the findings, emphasizing the need for further studies with larger, more diverse populations.

Despite these limitations, the program demonstrated several strengths. All participants expressed satisfaction with the clarity of the educational materials, delivery approach, and overall usefulness of the intervention, indicating strong engagement and acceptance. The observed reductions in both SBP and DBP over time further suggest a positive impact of the program on HTN management. These findings aligned with existing literature on CBHEP. Multiple studies have shown that tailored health education interventions effectively SBP among OAs, reinforcing the importance of patient empowerment and self-management strategies (Chen et al., 2020; Chen & Hsieh, 2021; Delavar et al., 2020; Fouroumandi, et al., 2022; Khanal, et al., 2021). SR and meta-analysis studies found that educational programs significantly improved BP control (Chen et al., 2020; Delavar et al., 2020), while RCT studies demonstrated that self-management workshops resulted in greater SBP reductions than compliance-based approaches (Khanal, et al., 2021; Kurt et al., 2022; McManus, et al., 2020; Ongkulna et al., 2020). Additionally, community-led programs have reported notable BP improvements among participants, particularly those with higher baseline readings (Khanal et al., 2021).

To build upon these findings, future research and practice should explore strategies to enhance participant retention, such as flexible scheduling, digital health coaching, and incorporating interventions into accessible community settings such as libraries, which have been effective in delivering health services. Investigating the long-term sustainability of BP improvements and integrating self-monitoring techniques could provide valuable insights,

especially considering concerns about home measurement accuracy. Expanding future studies to include more diverse populations would also improve the generalizability of findings.

References

American Heart Association & American Medical Association. (n.d.). *High blood pressure*. AHA/AMA. Retrieved June 5, 2024, from https://www.heart.org/en/health-topics/high-blood-pressure

Ampofo, A. G., Khan, E., & Ibitoye, M. B. (2020). Understanding the role of educational interventions on medication adherence in hypertension: A systematic review and meta-analysis. *Heart & Lung*, *49*(5), 537–547. https://doi.org/10.1016/j.hrtlng.2020.02.039

Bager, J., Manhem, K., Andersson, T., , P. H., Ljungman, C., & Mourtzinis, G. (2023). Hypertension: Sex-related differences in drug treatment, prevalence, and blood pressure control in primary care. *Journal of Human Hypertension*, *37*(8), 662–670. https://doi.org/10.1038/s41371-023-00801-5

Barrow, J. M., Brannan, G. D., & Khandhar, P. B. (2022). Research Ethics. *StatPearls Publishing*. https://pubmed.ncbi.nlm.nih.gov/29083578/

Centers for Disease Control and Prevention. (2023). *Hypertension control change package (2nd ed.).* Atlanta, GA: Centers for Disease Control and Prevention, U.S. Department of Health, and Human Services. Retrieved on June 10, 2024, from https://millionhearts.hhs.gov/tools-protocols/action-guides/htn-change-package/index.html

Chen, H.-H. & Hsieh, P. L. (2021). Applying the Pender's health promotion model to identify the factors related to older adults' participation in community-based health promotion activities. *International Journal of Environmental Research and Public Health*, *18*(19), 9985. https://doi.org/10.3390/ijerph18199985

Chen, Y., Li, X., Jing, G., Pan, B., Ge, L., Bing, Z., Yang, K., & Han, X. (2020). Health education interventions for older adults with hypertension: A systematic review and meta-analysis. *Public Health*, *37*(3), 461–469. https://doi.org/10.1111/phn.12698

Christ, C. M. (2017). Take steps to lower your risk for heart disease (Blog Post). *Arizona Department of Health Services.* Retrieved on October 15, 2024, from https://directorsblog.health.azdhs.gov/take-steps-to-lower-your-risk-for-heart-disease/

Delavar, F., Pashaeypoor, S., & Negarandeh, R. (2020). The effects of self-management education tailored to health literacy on medication adherence and blood pressure control among elderly people with primary hypertension: A randomized controlled trial. *Patient Education and Counseling*, *103*(2), 336–342. https://doi.org/10.1016/j.pec.2019.08.028

Foroumandi, E., Alizadeh, M., Nikpayam, O., & Kheirouri, S. (2022). Effectiveness of a self-management education program on hypertension control and contributing factors in older adults: An interventional trial. *Arterial Hypertension*, *26*(1), 32–38. https://doi.org/10.5603/AH.a2021.0025

Gavrilova, A., Bandere, D., Rutkovska, I., Šmits, D., Mauriņa, B., Poplavska, E., & Urtāne, A. I. (2019). Knowledge about disease, medication therapy, and related medication adherence levels among patients with hypertension. *Medicina (Kaunas, Lithuania)*, *55*(11), 715. https://doi.org/10.3390/medicina55110715

Institute for Healthcare Improvement. (n.d.). *How to improve: Model for improvement*. Retrieved June 20, 2024, from https://www.ihi.org/resources/how-to-improve

Intellectus Statistics [Online computer software]. (2023). Intellectus Statistics. https://statistics.intellectus360.com

Khanal, M. K., Bhandari, P., Dhungana, R. R., Bhandari, P., Prawal, L. B., Gurung, Y., Paudel, K. N., Singh, A., Devkota, S., & de Courten, B. (2021). Effectiveness of community-based health education and home support program to reduce blood pressure among patients with uncontrolled hypertension in Nepal: A cluster- randomized trial. *PLOS ONE*, *16*(10), e0258406. https://doi.org/10.1371/journal.pone.0258406

Kılıç, H. F., Arifoğlu, B., Kizilkaya, N. (2023). The relationship between successful aging and health literacy in older adults. *Perspectives in Psychiatric Care, 2023,* 1–7. https://doi.org/10.1155/2023/1462914

Kim, M. T., Bone, L. R., & Levine, D. M. (2000). Development and testing of the Hill-Bone compliance to high blood pressure therapy scale. *Progress in Cardiovascular Nursing*, *15*(3), 90–96. https://doi.org/10.1111/j.1751-7117.2000.tb00211.x

Kim, M. Y., & Oh, S. (2020). Nurses' perspectives on health education and health literacy of older patients. *International Journal Of Environmental Research And Public Health*, *17*(18), 6455. https://doi.org/10.3390/ijerph17186455

Koh, H. K., Harris, L. M., & Parchman, M. L. (2013). A proposed "health literate care model" would constitute a systems approach to improving patients' engagement in care. *Health Affairs*, *32*(2), 357–367. https://doi.org/10.1377/hlthaff.2012.1205

Kurt, D., & Gurdogan, E. P. (2022). The effect of self-management support on knowledge level, treatment compliance and self-care management in patients with hypertension. *Australian Journal of Advanced Nursing*, *39*(3), 14–23. https://doi.org/10.37464/2020.393.543

Langley, G. J., Moen, R. D., Nolan, K. M., Nolan, T. W., Norman, C. L., & Provost, L. P. (2009). *The improvement guide: a practical approach to enhancing organizational performance* (2nd ed.). Jossey-Bass.

Leszczak, J., Czenczek-Lewandowska, E., Asif, M., Baran, J., Mazur, A., & Wyszyńska, J. (2024). Risk factors and prevalence of hypertension in older adults from south-eastern Poland: An observational study. *Scientific Reports: Nature, 14(1450*). https://doi.org/10.1038/s41598-024-52009-3

McManus, R. J., Little, P., Stuart, B., Morton, K., Raftery, J., Kelly, J., Bradbury, K., Zhang, J., Zhu, S., Murray, E., May, C.R., Mair, F. S., Michie, S., Smith, P., Band, R., Ogburn, E., Allen, J., Rice, C., Nuttall, J., Williams, B., & Yardley, L. (2021). Home and online management and evaluation of blood pressure (HOME BP) using a digital intervention in poorly controlled hypertension: Randomised controlled trial. *British Medical Journal,372,* m4858. https://doi.org/10.1136/bmj.m4858

Melnyk, B. M., & Fineout-Overholt, E. (2023). *Evidence-based practice in nursing & healthcare: A guide to best practice* (5th ed). Wolters Kluwer.

Mission of Mercy. (n.d.). *Avondale Clinic benefits from American Heart Association's Target BP program.* Mission of Mercy. Retrieved on October 15, 2024, from https://www.amissionofmercy.org/arizona/a-heart-for-preventing-hypertension/

Ongkulna, K., Pothiban, L., Panuthai, S., & Chintanawat, R. (2022). Enhancing self-management through geragogy-based education in older adults with uncontrolled hypertension: A randomized controlled trial. *Pacific Rim International Journal of Nursing Research*, *26*(4), 690–705. https://he02.tcithaijo.org/index.php/PRIJNR/article/view/259276/176910

Persell, S. D., Karmali, K. N., Lee, J. Y., Lazar, D., Brown, T., Friesema, E. M., & Wolf, M. S. (2020). Association between health literacy and medication self-management among

community health center patients with uncontrolled hypertension. *Patient Preference and Adherence: Dovepress*, (14), 87–95. https://doi.org/10.2147/PPA.S226619

Sandoval-Rosario, M., Aseret- Manygoats, T., Batista, C., Heath, D. W., White, A. W., & Villa, N. (2019). *Heart disease and stroke in Arizona: 2019 burden report*. Arizona Department of Health Services. Retrieved on May 15, 2024, from https://www.azdhs.gov/documents/prevention/chronic-disease/heart-disease-burden-report-2019.pdf

Tempe. (n.d.). *Annual line-item budget: July 1, 2023- Jun 30, 2024* [PDF]. Tempe Arizona. Retrieved June 27, 2024, from https://www.tempe.gov/home/showpublisheddocument/102929/638239805644530000

Uemura, K., Yamada, M., & Okamoto, H. (2021). The effectiveness of an active learning program in promoting a healthy lifestyle among older adults with low health literacy: A randomized controlled trial. *Gerontology*, *67*(1), 25–35. https://doi.org/10.1159/000511357

U.S. Census Bureau (2022). *American Community Survey 1-year estimates.* Retrieved on October 15, 2024, from *Census Reporter Profile page for Tempe, AZ.* https://censusreporter.org/profiles/16000US0473000-tempe-az/

U. S. Department of Health and Human Services & Office of Disease Prevention and Health Promotion. (2021, August 24). *Health literate care model*. U. S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Retrieved June 20, 2024, from https://health.gov/our-work/national-health-initiatives/health-literacy/health-literate-care-model

Wall, H. K., Owens, L., & Graff, K. (2020). *Hypertension control change package* (2nd edition) [Initiative]. Centers for Disease Control and Prevention; U. S. Department of Health and Human Services. https://millionhearts.hhs.gov/files/HTN_Change_Package.pdf

Ward, J., Leitch, C., & Tu, T. (2020). Maricopa County 2019 CCHNA: *Community health status report.* Maricopa County Public Health. Retrieved on May 15, 2024, from, https://www.maricopa.gov/DocumentCenter/View/66054/2019-Community-Health-Status-Report

Appendix A

Evaluation and Synthesis Table

Table 1A

Evaluation Table for Quantitative Studies

Citation	Theoretical/ Conceptual Framework	Design/ Method/ Purpose	Sample/ Setting	Variables	Measurement/ Instrumentation	Data Analysis	Results/ Findings	Level of Evidence; Application to practice Generalization
Chen et al., (2020). Health education interventions for older adults with hypertension: A systematic review and meta-analysis **Country:** China **Funding:** China Medical Board **Bias:** 1. random sequence generation method 2. allocation concealment: 3. NR blinding of outcome/ assessment: 2 trials 4. risk of bias unclear in selective reporting due to unpublished protocols: 3 studies	NR	**Design:** Systemic review, meta-analysis **Purpose:** Evaluate effectiveness of HE intervention in control of BP among OAs	**Sample:** *N* = 1,105 **Characteristics** *M*-age: 65 years Gender: male: 51.3% *Countries:* Australia, Indonesia, Iran, Nepal, South Korea, USA, Turkey **Attrition:** 5 databases mentioned, yet 6 printed. Multiple limitations mentioned	**IV:** HE delivery (in the forms of courses & sessions) **DV1:** SBP outcome **DV2:** DBP outcome **Definition:** **IV:** HE delivery type, frequency, & duration) *Courses:* frequency per month *Sessions:* duration in minutes	*Quality Assessment:* Cochrane Collaboration Tool: review 5 databases PubMed, EMBASE, Web of Science, Campbell Library, World Health Organization, & Cochrane Central Register of Controlled Trials *Data Extraction:* study characteristics **Validity/ Reliability:** -Not applicable	RevMan5: M-A Merger effect: *SMD*, 95% *CI*, P ≤ .05 Heterogeneity: χ^2 & I^2, (p < .05 or I^2 >50%) -if significant: random effects model; if NS: fixed effect model	*Meta analysis:* **DV1:** overall reduction in SBP after HE *courses* (*SMD* = 4.80, 95% CI: 7.01-2.59, *p* < .05); Similar results after HE *sessions* (*SMD* = 11.73, 95% CI: 17.63–5.82, *p* < .05) **DV2:** reduced DBP: I < C DBP reduction: no difference after HE *course* (*p* = .09). Random effects: overall reduction DBP after HE *sessions* (*SMD* = 5.39, 95% CI: 7.98–2.79, *p* < .05).	**Level of Evidence:** I **Strengths:** study design, risks of biases discussed, measurement tools, data analyses **Weaknesses:** exclusion of some studies owing to their own limitations, few available relevant studies, multiple limitations listed. **Feasibility:** needs more adequately powered RCTS designed to impact HE on HTN for comparison **Applicability:** enhanced HE among HTN patients can significantly lower HTN

Keys: **BMI**- body mass index, **BP**- blood pressure, **C**- control group, ***CI***- confidence interval, **DBP**- diastolic blood pressure, **DS**- descriptive statistics, **DV**- dependent variable, **F**-female, **HCP**- healthcare professionals, **HE**- health education, **HL-** health literacy, **HLS**-health literacy scale, **HTN**- hypertension, **I**- intervention group, I^2- measure of heterogeneity, **IV**- independent variable, **M**- male, **MA**-medication adherence, **MARS**- medication adherence rating scale, **MMAS-8**- Morisky Medication Adherence Scale-8, ***N***-population size, ***n***- sample size, **NP-** nonparametric method, **NR**- none reported, **NS**- not significant, **OA**- older adults, **P**- expected probability, ***p***- actual probability, **RCT**-randomized controlled trial, **SBP**- systolic blood pressure, ***SD***- standard deviation, **SE**- self-efficacy, **SMB-** self-management behaviors**, SMBP**- self- management blood pressure, ***SMD***- standardized mean difference, **SME**- self-management education, **SPSS**- Statistical Package for the Social Sciences, IBM, **SS**- statistically significant, χ^2- chi-square

Delavar et al. (2020). The effects of self-management education tailored to health literacy on medication adherence and blood pressure control among elderly people with primary hypertension: A randomized controlled trial. **Country:** Iran **Funding:** Nursing & Midwifery Care Research Center, Tehran University of Medical Sciences (Grant no. 36975) **Bias:** NR *Appraised:* 1. MMAS-8 revised to fit cultural attribute 2. SME: invalidated	NR *Appraised:* SMB	**Design:** RCT **Purpose:** To evaluate the effects of SME tailored to HL on MA & BP control among OAs with primary HTN.	**Sample:** *N*=118 **Demographics** 60 years old & older**,** low HL, & speaks Persian. **Setting:** cardiovascular clinic in Fayyazbakhsh Hospital, Tehran **Attrition:** 1. High number of non-eligible participants after screening (*n*=235) 2. MMAS-8 revision by the researchers	**IV:** tailored SME **DV1:** MA **DV2:** proportions of participants with controlled SBP & DBP **Definition:** **IV:** tailored SME -tailored participants HL; HE materials: HTN therapy related information; teach-back method **DV1:** MA unintentional or intentional may be due to altered physical, mental, psychological function due to aging process. **DV2:** proportions of participants with controlled SBP & DBP: BP measured twice, right hand, 10 min apart, sitting x 15 min; avoidance of caffeine or smoking 30 min. prior measurement.	1. SME 2. MMAS-8 (for MA) 3. BP measurement device and feedback **Validity/Reliability** 1. SME: based on HL index; validity not discussed 2. MMAS-8: translated to Persian; validated for Iranian culture, other Iranian studies reported acceptable validity & reliability for the translated scale; present study assessed by test-retest intraclass correlation coefficient of the scale (ICC 0.71) (95% *CI*: 0.23, 0.91) 2. BP measurement device: validity ensured based on mmHg & manufacturer authenticity-Reister, Germany; device reliability assessed & confirmed through BP measurement process of 20 patients	1. intraclass correlation coefficient estimates & 95% *CI*: for MA scale, SBP & DBP measurements 2. Fisher's exact test & Chi-square test: between-group comparisons for *categorical* variables 3. Independent-sample *t*-test & Mann-Whitney *U* tests: *between group* comparisons for *numerical* variables 4. Paired-sample *t*-test: assessing *within group* differences 5. Analysis of covariance: adjusted *between group* analysis considering baseline values as covariates - all statistical analyses performed at $p <$ 0.05	**DV1:** MA 1. Baseline: poor MA (78.5% vs. 82.7%) & NS *between-group difference* ($p = 0.639$) 2. post-intervention: I > C ($p = 0.002$) **DV2:** Proportions of participants with controlled SBP & DBP --BP showed effectiveness of the study intervention in significantly reducing the *mean* scores of SBP & DBP ($p < 0.05$) both I & C	**Level of Evidence:** II **Strengths:** 1.strict exclusion criteria 2. well-defined statistical variables 3. use of multiple statistical analysis 4. well-defined results outcomes **Weaknesses:** 1. short length of study, follow-up periods, & probable unrealistic self-rated responses of some patients 2. limited evidence available on the effectiveness of HL-based interventions, requiring further studies **Feasibility:** HE tailored for HL has potential significance in strengthening SME & health outcomes; further studies with longer follow-up periods & more objective MA measurement methods required to produce firmer evidence regarding subjects' HL. **Applicability:** study result can be applicable in actual practice; SME

Keys: **BMI**- body mass index, **BP**- blood pressure, **C**- control group, ***CI***- confidence interval, **DBP**- diastolic blood pressure, **DS**- descriptive statistics, **DV**- dependent variable, **F**- female, **HCP**- healthcare professionals, **HE**- health education, **HL-** health literacy, **HLS**-health literacy scale, **HTN**- hypertension, **I**- intervention group, I^2- measure of heterogeneity, **IV**- independent variable, **M**- male, **MA**-medication adherence, **MARS**- medication adherence rating scale, **MMAS-8**- Morisky Medication Adherence Scale-8, ***N***- population size, ***n***- sample size, **NP-** nonparametric method, **NR**- none reported, **NS**- not significant, **OA**- older adults, **P**- expected probability, ***p***- actual probability, **RCT**- randomized controlled trial, **SBP**- systolic blood pressure, ***SD***- standard deviation, **SE**- self-efficacy, **SMB-** self-management behaviors**, SMBP**- self- management blood pressure, ***SMD***- standardized mean difference, **SME**- self-management education, **SPSS**- Statistical Package for the Social Sciences, IBM, **SS**- statistically significant, χ^2- chi-square

								consistent evaluation reinforcement. Further studies needed to determine effectiveness of SME based on HL interventions on other chronic conditions
Foroumandi et al., (2022). Effectiveness of a self-management education program on hypertension control and contributing factors in older adults: an interventional trial **Country:** Iran **Funding:** Tabriz University of Medical Sciences **Bias:** NR	NR	**Design:** Interventional trial **Purpose:** Assess effectiveness of SME program on BP & cardiometabolic risk factors control among OAs	**Sample:** *N* = 227 **Demographics:** *M*-Age: 64.5 ± 5.8 years Gender: majority F=71% Married: 95.2% Housekeeper: 70.8% **Settings:** 3 primary health centers **Attrition:** Lost to follow-up: *n* = 21	**IV:** SME **DV1:** BP **DV2:** Lipid Profile **DV3:** Anthropometric index **Definition:** **DV1:** BP- resting (baseline & post-intervention) **DV2:** Lipid Profile -Fasting blood sugar, total cholesterol, triglyceride -peripheral venous sample 12-14H; centrifuged x 10 minutes at 300 x g **DV3:** Anthropometric indices	1. Face-to-face interview (group) for demographic baseline value 2.Weight: balance beam scale 3. Height: stadiometer 4. BMI: weight ÷ height 5. Labs: centrifuge machine 6. BP: Omron digital BP device **Validity & Reliability** 1.face to face- created by researchers 2. Balance Beam scale: NR 3. Stadiometer: secured, NR 4. BMI: established standard math calculation 5.Centrifuge machine: established standard lab equipment	All statistical analyses performed at $p <$ 0. 05 1. χ^2: categorical variables *2.* normal distribution (*means* ± *SD*) 3. paired t-test: difference in measured variables (baseline – post-intervention)	**DV1: BP- reduction** 1. reduced SBP (-2.6 ± 19.1; *p* = 0.04) 2. not reduced DBP (-0.77 ± 12.3; *p* = NS) **DV2: Lipid Profile:** lower from baseline 1. Fasting Blood Sugar: 3.1 ± 18.3 mg/dL (p < 0.0001) 2. Total Cholesterol: p < 0.0001 3. Triglyceride: NS **DV3: Anthropometric indices**-BMI: reduced 0.9kg ± 5.3 from baseline, *p* = 0.02	**Level of Evidence:** III **Strengths**: specific study variables of measurable outcomes & desired outcomes **Weaknesses:** small sample, short length of study (3 mos.), absence of explanations on the NS effect of SME on DBP, singular health provider (nutritionist) collecting baseline info; study design requiring further studies **Feasibility:** health lifestyle modification + SME + MA will reduce cardiometabolic risk factors **Applicability:** SME with healthy lifestyle and physical activity strategies will prove beneficial for us in community-based settings

Keys: **BMI**- body mass index, **BP**- blood pressure, **C**- control group, ***CI***- confidence interval, **DBP**- diastolic blood pressure, **DS**- descriptive statistics, **DV**- dependent variable, **F**-female, **HCP**- healthcare professionals, **HE**- health education, **HL-** health literacy, **HLS**-health literacy scale, **HTN**- hypertension, **I**- intervention group, I^2- measure of heterogeneity, **IV**- independent variable, **M**- male, **MA**-medication adherence, **MARS**- medication adherence rating scale, **MMAS-8**- Morisky Medication Adherence Scale-8, ***N***-population size, ***n***- sample size, **NP-** nonparametric method, **NR**- none reported, **NS**- not significant, **OA**- older adults, **P**- expected probability, ***p***- actual probability, **RCT**-randomized controlled trial, **SBP**- systolic blood pressure, ***SD***- standard deviation, **SE**- self-efficacy, **SMB-** self-management behaviors**, SMBP**- self- management blood pressure, ***SMD***- standardized mean difference, **SME**- self-management education, **SPSS**- Statistical Package for the Social Sciences, IBM, **SS**- statistically significant, χ^2- chi-square

				-BMI	6. Omron BP device: validate equipment			
Gavrilova et al., (2019). Knowledge about disease, medication therapy, and related medication adherence levels among patients with hypertension **Country:** Latvia **Funding:** No external funding as reported. **Bias:** -NR ***Appraised:*** 1. sampling method 2. self-rating	NR	Design: cross-sectional, observational, quantitative, descriptive study **Purpose:** Assess patients' MA & knowledge regarding their disease in relation to their demographic attributes	**Sample:** *N* = 187 **Demographics** 1. *M*- age: 64.36 2. Gender: F: *n* = 133; M: *n* = 54 3. HTN duration 4. Education level 5. BMI 6. Physical activity **Settings:** primary care settings **Attrition:** Self-rating bias	**Theme:** Patient adherence related to demographic characteristics **Subtheme 1:** knowledge disease & control **Subtheme 2:** medication therapy **Definitions:** **Subtheme 1:** knowledge disease & control: questions about optimal BP level, recommended diet, doubts about their therapy **Subtheme 2:** medication therapy: evaluate the extent of compliance with physician's prescriptions on medication use	1. Demographic survey 2. MMAS-8 **Validity & Reliability** 1. Demographic survey: 39 questions based non-adherence factors from literature & previously performed studies 2. MMAS-8: established validated, high reliability & validity scale→ low-level adherence or non-adherence evaluate the level of MA for chronic diseases, like HTN.	1. DS 2. NP methods: a. Spearman correlation b. Mann–Whitney test (*U*) & chi-square tests 3. two-sided statistical tests using $p = 0.05$	**Subtheme 1:** knowledge disease & control a. Only 43.9% certain of their controlled BP b. 61.4% with medication concerns & 38.6% with uncertain medication profile & illness severity requiring prescription d. 80.1% aware recommended diet e. 32.3% adheres to the recommended diet. **Subtheme 2:** Medication therapy: a. Medication regimen instruction adherence: higher self-rating = higher level of adherence ($p < 0.0001$, $\beta = 0.38$), b. Duration of HTN: longer = more adherence ($p = 0.014$, $\beta = 0.19$)	**Level of Evidence:** III **Strengths:** 1. multiple statistical analysis utilized 2. specific sampling inclusion criteria 3. appropriate length of study (7 months) 4. detailed discussion of previous & current studies for comparison. **Weaknesses:** 1. no bias reported 2. unspecific sampling method **Feasibility:** importance of SMB to enhance health promotion & control HTN; further tests required to determine the similarity of problems related to non-medication treatment & use of anti-HTN drugs **Applicability:** Applicable in the outpatient clinic setting & CBHEPs
Khanal et al., (2021). Effectiveness of community-based health education and home support	NR	**Design:** open-level, parallel-group, cluster RCT	**Sample:** *N* =125 **Demographics:** 1. 1. *M*-age: 56.6	**IV1:** HE & home support **DV1:** Proportion HTN patients with controlled	1.HE & home visits: tailored syllabus & home support visit by health volunteer	1. DS (*mean* & *SD*): subject characteristics	**DV1:** Proportion HTN patients with controlled SBP in the I & C a. well-controlled SBP increased to 58.3%	**Level of Evidence:** 1 **Strengths:** 1. RCT design 2. Use of clustered randomization to avoid

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program to reduce blood pressure among patients with uncontrolled hypertension in Nepal: A cluster-randomized trial **Country:** Nepal **Funding:** Nepal Family Development Foundation **Bias:** -none reported ***Appraised:*** 1. reporting bias due to small & single geographic location		**Purpose:** Assessing the effectiveness of HE & home support programs in lowering BP among patients with uncontrolled HTN in a suburban community of Nepal.	2. Gender: M:46% (I & C groups) 3. Marital status: both I & C 4. Education: no formal both I &C (majority) Language: Nepali **Attrition:** 1.6-mo: 5 dropouts 1.a. 3 participants either migrated, lost the phone, or discontinued on the I group 1.b. 2 participants were lost to f/u for same reasons in the C group	SBP in the I & C groups **DV2:** Controlled DBP proportion, *mean difference* of SBP, DBP, BMI, waist size, & knowledge score **Definitions:** **IV:** HE & home support: 4 sessions & home visits **DV1:** Controlled SBP in the I & C: based on 95% *CI* **DV2:** *mean difference* (follow-up – baseline)	2. Adapted WHO's Stepwise Approach to Surveillance (STEPS) Nepal: demographic info & health behaviors, & physical activity 3. HTN knowledge 4. BP readings: *mean* of 2 BP recordings in the final analysis **Validity/ Reliability:** 1. HE: Tailored syllabus: designed by researchers based on HTN information and guidelines from leading medical organizations; home support visit: trained health volunteer 2. Adapted WHOs STEPS Nepal & Global Physical Activity Questionnaire: calculated number of physical activities in metabolic equivalents of task (MET) per week based on Cut off value: 600 MET-minutes per week or lower to define	2. Independent t-test: continuous variable 3. χ^2: binary variable 4. Fischer's exact test: if expected frequency is small (less than 5) 5. Binary logistic regression model: 6. Linear regression: knowledge score (baseline =follow-up) 7. Little's test for missing completely at random: missing value All tests were *two-tailed* & SS) $p < 0.05$	from 3.3% (I) vs. 40% from 3.3% (C), (p = 0.046) b. increased 30% of controlled DBP after intervention vs. 20% (C) c. 38.3% of participants had well-controlled BP 6 months after intervention vs. 28.3% had controlled BP (C) **DV2:** Controlled DBP proportion, *mean difference* of SBP, DBP, BMI, waist size, & knowledge score: a. *mean difference* in SBP (I) significantly higher than (C) ($p<0.041$). b. *mean (SD)* of DBP reduced from 100.41 (14.5) mmHg to 89.46 (9.4) mmHg after intervention c. BMI: *mean change* (follow-up - baseline) (*SD* = -0.18 (2.31) (C) & (*SD* = -0.71 (2.1) (I) d. waist size: *mean difference* (follow-up - baseline) *SD* = -0.23 (9.1) cm (C) & *SD* = -0.73 (8.2) cm (I) e. knowledge score:	sample contamination & statistician blinded to the clusters. 3. Extended length of study from recruitment to intervention period. **Feasibility:** 1. Helps to maintain satisfactory BP control by increasing HL & awareness 2. HE & home visits can be used to existing health systems **Application:** Applicable to use in the community in the sustainability phase which will include other community & school partnerships.

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					inadequate activity level 3. HTN knowledge: 10 questionnaires developed by researchers- validity NR 4. BP readings: mean of 2 BP recordings in the final analysis		improved by 2.38 (*SD* = 2.4) (I) significantly higher than C 0.13 (1.8) ($p<0.001$)	
Kurt & Gurdogan (2022). The effect of self-management support on knowledge level, treatment compliance and self-care management in patients with hypertension **Country:** Turkey **Funding:** NR **Bias:** NR	NR	**Design:** RCT **Purpose:** 1**.** Determine the effect of self-management support on HTN literacy level, treatment adherence, & self-care management 2. Examine BP changes after self-management support	**Sample:** *N* = 137 **Demographics**: *M*-age: 56.23 ± 6.9 years Gender: NS Education: primary > high school **Setting:** Internal medicine & cardiovascular clinic care **Attrition**: NR	**IV:** self-management support **DV1:** HTN knowledge **DV2:** Treatment adherence **DV3:** BP Control **Definition:** **IV:** didactic + interactive sessions **DV1:** HTN knowledge I vs. C: use of HLS + HTN questionnaire **DV2:** self-management, face-to-face interview, follow-ups **DV3:** SMBP education and monitoring	1. Patient Info. Form 2. HTN Knowledge Level Scale 3. Hill- Bone Compliance to High BP Therapy Scale 4. Self-care Management Process in Chronic Illness Scale **Validity & Reliability:** 1.Patient forms: developed by researchers 2. HTN Knowledge Level Scale: α = 0.59-0.92 (sub-dimension scale); total score: α = 0.72 3. Hill-Bone Compliance to High BP Therapy Scale: α = 0.62-0.83' total score: α = 0.72 4. Self-care Management Process	1. Pearson χ2 2. Fisher-Freeman-Halton exact test 3. independent sample *t*-test (1-3): equivalence between I & C 4. DS (*means, SD*, frequencies): sociodemographic & disease-related characteristics 5. Wilcoxon test & paired sample *t*-test: difference between repeated measurements 6. Mann Whitney *U* test: compare quantitative continuous data between 2 independent groups; $p < 0.05$	**DV1:** HTN knowledge -significant improvement in HTN literacy (p=0.000) **DV2:** Treatment adherence - significant (p=0.000) **DV3:** BP Control - reduced SBP/DBP (p = 0.000)	**Level of Evidence:** II **Strengths:** study design, multiple measurements & data analyses used, results consistent with European Society of Cardiology guidelines **Weaknesses:** small sample, NR of bias **Feasibility:** **-**learning approach for nurses to effectively use training & counselling for HTN patients **Applicability:** -enhanced education for HTN patients, SMBP teaching, establishment of cardiovascular rehab unit in nursing units to provide HTN patients

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					in Chronic Illness Scale: α = 0.68-0.83; total score: α= 0.89			more effective self-management support
McManus et al. (2020). Home and Online Management and Evaluation of Blood Pressure (HOME BP) using a digital intervention in poorly controlled hypertension: Randomized controlled trial. **Country:** United Kingdom **Funding:** National Institute for Health Research **Bias:** -preferential recruitment towards higher socioeconomic status (authors claimed that the factor did not affect the outcomes)	NR	**Design:** unmasked RCT with automated ascertainment of outcome **Purpose:** -HOME BP trial aimed to test digital intervention in primary care through SMBP with reminders, guided self-management, predetermined drug changes, and lifestyle change support would result in lower BP in patients receiving treatment that was poorly uncontrolled HTN and determine cost effectivity of the trial	**Sample:** *n* = 622 **Demographics** 1. Age: 18 years old and older 2. Ethnicity: W, BA, BC, Indian, Pakistani, others 3. Gender: F 4. Condition: treated with poorly controlled HTN (>140/90 mmHg) 5. HTN treatment*:* no more than 3 anti-HTN drugs I -willing to self-monitor -internet access **Setting:** 76 general practices **Attrition:** Increasing number of participants lost before end of study	**IV1:** uncontrolled HTN **DV1:** Health behaviors & HL **DV2:** SMB **DV3:** lifestyle support (optional BS) **Definitions:** **IV1:** uncontrolled HTN: BP>140/90 mmHg **DV1:** Health behaviors & HL: targeted to increased motivation & knowledge for both patients and HCPs. **DV2:** SMB -ability to perform the SBMP (using Omron M3 monitor) and provide feedback.	1. Randomization: online system 2. online use instructions (SMBP) demonstration video; feedback from BP device 3. Illness Perception Questionnaire 4. MARS questionnaire: HRQoL (EQ-5D-5L) **Validity/ Reliability** 1. SMBP: objective achieved by evidence of efficacy, addressing concerns about patient titration acceptance, reliability of BP readings, and study procedures *2.* Illness Perception Questionnaire*:* used as a modified patient enablement instrument & possible adverse effects showed no	1. general linear modelling: compare SBP (I vs. usual care at follow-up 2. Imputation Model: (included outcome & stratification variables – baseline BP, practice, BP target levels, & sex 3. complete cases & repeated measures technique 4. Intention-to-treat analysis*: 2%* out-of-range BP (randomized error) but kept in trial after issue discussed with sponsor and general practitioners.	**DV1:** Health behaviors & HL *Engagement* = 92% completed two core training sessions **DV2:** SMB 1. Enablement Score: reduced over time (increased enablement)- significant difference was found (12 months), *CI*: -95% (-0.5 to -0.2) (I & UC) 2. SMBP: 88% completed BP readings (1 week); 80% completed (last 3 weeks); 70% still monitoring in the last 3 months (out of 12 months).	**Level of Evidence: II** **Strengths:** 100% online questionnaires completion, modest cost; robust in sensitivity analyses, complete case analysis, use of 2nd to 6th BP readings as the outcome; large trial of digital intervention in HTN; 1-year follow-up; over recruitment ensured a detection in the difference of BP; ensured generalizability from recruitment of large number of general practitioners. **Feasibility:** -low marginal cost -online delivery of training -potential cost-effective implementation -DI, lifestyle support, provider & pharmacy input, & anti-HTN drugs can be successful **Application:**

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					differences between groups; showed patients were enabled to be more active in controlling their HTN 3. MARS: -median baseline: 24, maximum possible 25, interquartile range 23-25; *CI*=-0.5 to -0.2 between I & UC			Useful in engaging patients to be active in controlling their HTN**;** cost-effective delivery consideration**;** extensive user feedback for shared, positive understanding of aims & benefits of HOME BP; increase clinician buy-in & incorporate in clinical practice guidelines
Ongkulna et al. (2020). Enhancing self-management through geragogy-based education in older adults with uncontrolled hypertension: A randomized controlled trial **Country:** Thailand **Funding:** partial research funding from the Graduate School, Chiang Mai University **Bias: NR** 1. sampling using permuted block	1. Self-Management 2. geragogy-based education	**Design:** parallel, two-group RCT with a Pre-& Post-test design (CONSORT 2010 guidelines) **Purpose:** Investigate the effectiveness of the geragogy-based education in enhancing HL, SE, & SMBs among OA with uncontrolled HTN	**Sample:** *n* = 100 **Demographics:** 1. Age: 60-80 years 2. Gender: F 3. Marital status: married **Setting:** 1 out of 7 district hospitals **Attrition:** Zero (no study participant fall-out)	**IV1:** Geragogy-based education **DV1:** HL **DV2:** SE **DV3:** SMB **Definitions:** **DV1:** HL 1. functional HL: print visibility 2. communicative HL: collected information from various sources 3. critical HL: applicability of information to a situation **DV2:** SE measure self-management self-efficacy of OAs with uncontrolled HTN	1. Demographic data recording form *2.* HLS 3. Hypertensive Self-Management SE Scale 4. SMB scale **Validity/ Reliability:** 1. Demographic data recording form: NR 2. HLS: content validity tested by panel of 6 HTN & self-management experts; scale-based content-validity index = 0.96 (translated HLS); pilot: α =.9; present: α =.97 3. Hypertensive Self-Management SE Scale: internal	1. DS (demographic data description & DVs *mean scores*) 2. Independent sample t-test: differences of the *mean scores* of HL, SE, & SMB between E & C at each point of measurement 3. two-way repeated measures *ANOVA:* differences HL, SE, & SMB between E & C & times	**Demographic data:** E & C = NS differences **DV1:** HL 1. Baseline: E & C = moderate level 2. 2. Post-intervention: E group: high level 3.Program end, post-1 & 3 months: E group: higher 4. C group: maintained moderate **DV2:** SE: similar as with HL **DV3:** SMB: similar as with HL	**Level of Evidence:** II **Strengths:** 1. Study design 2. Use of language translation experts 3. Significant statistical results to study outcomes 4. 100% retention **Feasibility:** 1. Findings supported conceptual framework & proposed research hypotheses of the study, showed that HL & SE are most powerful factors affecting SMB **Application:** Consider conducting a related research study involving BP values trend as secondary outcome for study

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randomization: potential bias 2. gatekeeper bias: potential bias				**DV3:** SMB assesses SBM of older adults with uncontrolled HTN	consistency reliability: α = .97 4. SMB Scale: validated by same experts for the HLS; scale-based content-validity index = 0.94; pilot: α=.87; present: α= .95	-η2 at medium effect of .06, α=.05, and power of .80 -E>C: all point of measurement for HL, SE, & SMB *MS* (*p*<.05		effectiveness and sustainability.
Uemura et al., (2021). The effectiveness of an active learning program in promoting a healthy lifestyle among older adults with low health literacy: A randomized controlled trial **Funding:** Grant-in-Aid for Young Scientists (18K17926); Japan Society of Promotion of Science **Bias:** NR *Appraised:* sample bias: screened participants participation in previous observational study in Japan	Sociocultural Development Theory	**Design:** single-blind, parallel-group RCT **Purpose:** Examine the effects of an active learning program to promote behavioral changes in daily life & self-management according to the individual's health status.	**Sample:** *N*= 60 **Demographics** 1.Age: 65 & older 2. HL: low **Setting:** rural community **Attrition:** 1. Dropouts: *n* =20 2. small sample	**IV:** Active learning program **DV1:** Comprehensive HL **DV2:** Lifestyle Behaviors **DV3:** Physical Function & Mental Health **Definitions:** **IV:** Active learning program: focused on the role of exercise, nutrition, & cognitive activity; weekly session **DV1:** Comprehensive HL: assesses functional, communicative, & critical HL **DV2:** Lifestyle Behaviors: daily physical activity, food intake, life-	1. Shortened European HL Survey 2. HLS-14 3. Triaxial accelerometer (EW-NK52) 4. Life-Space Assessment 5. 6-item Lubben Social Network Scale 7.Portable grip strength dynamometer (T.K.K.5401, Takei Ltd.): 8.15-item Geriatric Depression Scale **Validity/ Reliability:** 1. Shortened European Health Literacy Survey Questionnaire: originally developed 2011 as HLS-EU-Q47, shortened Japanese version was validated in a similar study	SS level: *P* < 0.05 1. Linear mixed model: estimation of intervention effects in accordance with intention-to-treat approach.	Baseline & Week 24 **DV1**: Communicative HL: **IV** led to a significant increase (M1-M2 = 2.3, 95% CI = 0.3 to 4.3); improvement greater in I than C 1. Critical HL: greater increase in I than C; group difference: NS (M_1- M_2 = 1.3, 95% *CI* = –0.09 to 2.8) 2. Functional HL: group difference: NS (M_1-M_2 = –0.8, 95% *CI* = –3.0 to 1.3) **DV2:** Lifestyle Behaviors: significant increase in I than C in analyzed in clinical characteristics as defined **DV3:** Physical Function & Mental Health: significant improvement in I than C in defined indicators: grip strength, gait	**Level of Evidence:** II **Strengths:** 1.study design 2. Specific outcomes and outcome criteria 3. tools & measurements are all supported by previous successful studies **Weakness** 1. small sample 2. lack of follow-up assessments 3. screened older adults' previous participation in observational study in Imizu, Japan 3. shortened European HL Survey **Feasibility:** Active learning program can promote a healthy lifestyle & prevent cognitive decline among older adults lacking confidence in health communication.

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				space mobility, & social networks **DV3:** Physical Function & Mental Health: muscle strength & gait speed & depressive symptoms	2. HLS-14: adapted from diabetic-specific HLS reliability & validity as a generic measure for Japanese adults 3. Triaxial accelerometer (EW-NK52): NR 4. Life-Space Assessment: validated study for use in the community health for target individualized interventions 5. 6-item Lubben Social Network Scale: showed good convergent validity		speed, depression symptomatology	**Applicability:** Great potential to use in community-based education programs across clinical disciplines

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Table 1B

Evaluation Table for Qualitative Studies

Citation	Theory/ Conceptual Framework	Design/ Method/ Sampling	Sample/ Setting	Major Themes Studied/ Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Themes	Level/ Quality of Evidence; Decision for/ Application to practice; Generalization
Chen, et al., (2021). Applying the Pender's Health Belief Promotion Model to identify the factors related to older adults' participation in community-based health promotion activities **Country:** Taiwan **Funding:** no external funding **Bias:** 1. Convenience sampling-small size, surveyed 1x 2. Study design bias: precludes inferences related to factors of OAs participation in community-based health promotion activities	Pender's Health Promotion Model	**Design:** cross-sectional **Method:** community-based health promotion participation **Purpose:** Identify factors associated with OAs participation in community-based health promotion activities.	**Sample:** *N* = 139 **Demographics:** 1. *M*-age: 72.7 2. Gender: F: 74.8% 3. Marital status: 4. Married: 64.7% 5. Education: 59% low 6. Income: 51.8% low 7. Health status: 59% "not good" 8. Chronic disease: 76.3% **Setting:** community health center **Attrition:** NR *Appraised:* small sampling, high numbers of biases	**RQ1:** demographic characteristics **RQ2:** OAs participation in community-based health promotion activities **RQ3:** Predictors 1. Perceived benefits 2. Perceived barriers 3. SE 4. Social support 5. Activity-related affect **Definitions:** **RQ3:** Predictors 1. Perceived benefits: strongest predictor for likelihood of participation 2. Perceived barriers: NS in present study C. SE: important determinant for complex activities & long-term changes in health behaviors	**Data Collection:** Older Adults Health Promotion Activity Questionnaire **Data Dependability:** 1. Questionnaire survey: *n* = 47 (random selection) 2. Number of OAs review of questionnaire: *n* = 12: readability & comprehension 3. Questionnaire content validity: content validity index = 0.88 (good) 4. 4 items revised for appropriateness 5. Preliminary questionnaire piloted with 42 OAs	1. DS: *means*, frequencies, *SD* 2. Independent sample *t*-test: comparison 2 dependent groups 3. ANOVA: comparison 3 or more groups 4. Pearson's correlation analysis: OA participation & health promotion questionnaire with all sub-scales 5. multiple linear regression analysis: predictors association with OA participation SS level: $P < 0.05$	**RQ1:** Demographic characteristics: age, perceived benefits & SE identified as significant predictors of participation in health promotion activities ($\beta = 0.305$; $p < 0.05$) **RQ2:** OAs participation in community-based health promotion activities: significantly correlated with perceived benefit ($r = 0.22$, $p < 0.05$) & SE ($r = 0.17$, $p < 0.05$) **RQ3:** Predictors *mean* scores A. Perceived benefits & gender: SS; F > M (t- 1.351, $p = 0.033$) B. Perceived barriers & marital status: SS; single/divorced > married ($F = 2.168$, p 0.0002) C. Self-efficacy & gender: SS; F > M ($t = -1.725$, $p = 0.047$) C. Self-efficacy & health status: SS; "good health" > "not good health" ($t = -4.622$, $p = 0.0004$)	**Level of Evidence:** III **Strengths:** multiple data analyses, comparative data with previous studies **Weakness:** biases reported, study design **Feasibility:** 1. Recommends further studies using experimental designs to test causality in the associations among the measured study variables 2. Needs focus on increasing community awareness on community-based health promotion activities benefits while reducing identified barriers. **Application:** Beneficial to use as a foundational framework for predicting OA participation when developing a community-based program.

Keys: **BMI**- body mass index, **BP**- blood pressure, **C**- control group, ***CI***- confidence interval, **DBP**- diastolic blood pressure, **DS**- descriptive statistics, **DV**- dependent variable, **F**- female, **HCP**- healthcare professionals, **HE**- health education, **HL-** health literacy, **HLS**-health literacy scale, **HTN**- hypertension, **I**- intervention group, I^2- measure of heterogeneity, **IV**- independent variable, **M**- male, **MA**-medication adherence, **MARS**- medication adherence rating scale, **MMAS-8**- Morisky Medication Adherence Scale-8, ***N***- population size, ***n***- sample size, **NP-** nonparametric method, **NR**- none reported, **NS**- not significant, **OA**- older adults, **P**- expected probability, ***p***- actual probability, **RCT**- randomized controlled trial, **SBP**- systolic blood pressure, ***SD***- standard deviation, **SE**- self-efficacy, **SMB**- self-management behaviors**, SMBP**- self- management blood pressure, ***SMD***- standardized mean difference, **SME**- self-management education, **SPSS**- Statistical Package for the Social Sciences, IBM, **SS**- statistically significant, χ^2- chi-square

3. Self-report bias					6. α: stability & consistency; α = 0.72 - 0.94		D. Social support & patient characteristics: NS, ($p > 0.05$) E. activity- related affect & education level: SS; lower education > higher education ($t = 0.434$, $p = 0.021$)	

Keys: **BMI**- body mass index, **BP**- blood pressure, **C**- control group, ***CI***- confidence interval, **DBP**- diastolic blood pressure, **DS**- descriptive statistics, **DV**- dependent variable, **F**- female, **HCP**- healthcare professionals, **HE**- health education, **HL-** health literacy, **HLS**-health literacy scale, **HTN**- hypertension, **I**- intervention group, I^2- measure of heterogeneity, **IV**- independent variable, **M**- male, **MA**-medication adherence, **MARS**- medication adherence rating scale, **MMAS-8**- Morisky Medication Adherence Scale-8, *N*- population size, ***n***- sample size, **NP-** nonparametric method, **NR**- none reported, **NS**- not significant, **OA**- older adults, **P**- expected probability, ***p***- actual probability, **RCT**- randomized controlled trial, **SBP**- systolic blood pressure, ***SD***- standard deviation, **SE**- self-efficacy, **SMB-** self-management behaviors**,** **SMBP**- self- management blood pressure, ***SMD***- standardized mean difference, **SME**- self-management education, **SPSS**- Statistical Package for the Social Sciences, IBM, **SS**- statistically significant, χ^2- chi-square

Table 1C

Synthesis Table of Project- Related Studies

Studies	Chen et al., (2020)	Chen & Hsieh (2021)	Delavar et al., 2019	Fouroumandi et al., 2022	Gavrilova et al., 2019	Khanal et al., 2021	Kurt et al., 2022	McManus et al., 2020	Ongkulna et al., 2020	Uemura et al., 2021
Design LOE	SR, M-A/ I	CS/ III	RCT/ II	IT/ III	CS, Obs, Q, DS/ II	CB, OL, PG, Cl RCT/ II	RCT/ II	Unmasked RCT, AAO/ II	Parallel 2-G, RCT, Pre- & Post- test/ II	SB, PG, RCT/ II
Sample										
n = subject	5 DBs, 7 RCT	139	118	227	187	125	137	622	100	60
M – age	U, ≥ 60	72.7	X	64.5 ± 5-5	64.36	56.6	56.23 ± 6.96	66	68	73 ± 4.9
HTN Status										
Duration	U	U	U	✓	✓	U	✓	✓	✓	U
DT	U	U	✓	✓	✓	✓	✓	✓	✓	U
BP≥ 140/90 mmHg	✓	U	✓	✓	✓	✓	✓	✓	✓	U
HLS Status										
Low	U	✓	✓	U	✓	✓	U	U		✓
Moderate	U								✓	

Keys: ↑- increased, ↓- decreased, ✓- applied, **AAO**- automated ascertainment outcome, **BMI**- body mass index, **BP**- blood pressure, **Cl**- cluster, **C**- controlled, **CB**- community- based, **CS**- cross-sectional, **CVC**- cardiovascular clinic, **D**- didactic, **DH**- district hospital, **DS**- descriptive study, **DT**- drug therapy, **GC**- group class, **HL**- health literacy, **HLS**- health literacy scale, **HSMSES**- Hypertensive Self-Management Self-Efficacy Scale, **HTN**- hypertension, **I**- interactive, **IC**- individual class, **IT**- interventional trial, **LP**- lipid profile, **LOE**- Level of Evidence, ***M***- mean, **MA**- medication adherence, **M-A**- metanalysis, **MMAS-8**- Morisky Medication Adherence Scale-8, **NS**- not significant, **OL**- open level, **PC**- primary care, **PG**- parallel group, **Q**- quantitative, **RCT**- randomized controlled trial, **S**- significant, **SB**- single-blind, **SE**- self- efficacy, **SMBP**- self- management blood pressure, **SME**- self- management education, **SR**-systematic review, **TA**- treatment adherence, **U**- unspecified, **X**- not measured

Settings										
CV/DH	X				✓		✓		✓	
CB/PC	X	✓	✓	✓		✓		✓		✓
SMB/SME	✓	X	✓	✓	X		✓	✓	✓	✓
GC: I or D	X	X		✓D	X	✓I & D				✓I & D
IC: I or D	X	X			X		✓I & D	✓ I & D		
Tools										
BP Feedback							✓	✓	✓	
HLS/MMSA-8			✓		✓		✓		✓	✓
BMI/Lab: LP	✓			✓		✓				
Questionnaire		✓			✓	✓	✓		✓	
Outcomes										
HL	↑		X	X	↓	↑	↑		↑	X
TA/MA	↑		↑	↑	↓ / ↑	X	↑		↑	X
BP Control	C		NS	C	↓	C	C	C	C	X
SMB/HB/SE		S					↑	↑	↑	

Keys: ↑- increased, ↓- decreased, ✓- applied, **AAO**- automated ascertainment outcome, **BMI**- body mass index, **BP**- blood pressure, **Cl**- cluster, **C**- controlled, **CB**- community- based, **CS**- cross-sectional, **CVC**- cardiovascular clinic, **D**- didactic, **DH**- district hospital, **DS**- descriptive study, **DT**- drug therapy, **GC**- group class, **HL**- health literacy, **HLS**- health literacy scale, **HSMSES**- Hypertensive Self-Management Self-Efficacy Scale, **HTN**- hypertension, **I**- interactive, **IC**- individual class, **IT**- interventional trial, **LP**- lipid profile, **LOE**- Level of Evidence, ***M***- mean, **MA**- medication adherence, **M-A**- metanalysis, **MMAS-8**- Morisky Medication Adherence Scale-8, **NS**- not significant, **OL**- open level, **PC**- primary care, **PG**- parallel group, **Q**- quantitative, **RCT**- randomized controlled trial, **S**- significant, **SB**- single-blind, **SE**- self- efficacy, **SMBP**- self- management blood pressure, **SME**- self- management education, **SR**-systematic review, **TA**- treatment adherence, **U**- unspecified, **X**- not measured

Appendix B

Theoretical Framework

Figure 1

Health Literate Care Model

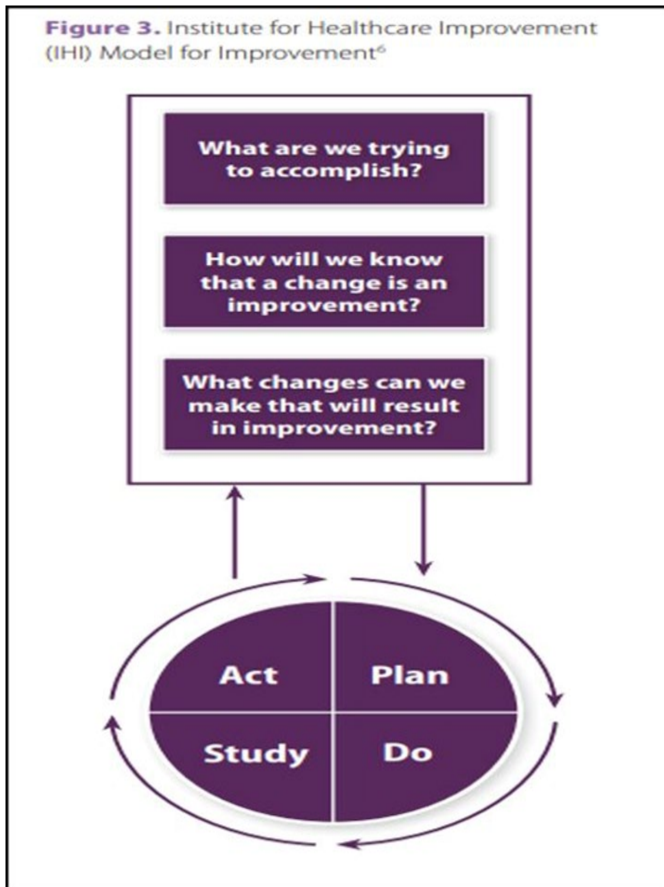
Note: The HCL model weaves HL strategies into the widely accepted care model, formerly known as the chronic care model. Image from: Health literate care model (PDF), by U. S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion, 2021, https://health.gov/our-work/national-health-initiatives/health-literacy/health-literate-care-model. Adapted from "A proposed 'health literate care model' would constitute a systems approach to improving patients' engagement in care," by Koh et al., 2013, Health Affairs, 32, (2), p. 357-367 (https://www.healthaffairs.org/doi/pdf/10.1377/hlthaff.2012.1205). Copyright 2013 by Project HOPE—The People-to-People Health Foundation, Inc. Permission granted for use of image through the Copyright Clearance Center, Inc. on behalf of Project HOPE.

Appendix C

Implementation Framework

Figure 2

Model for Improvement



Note. The model guides the implementation of the Centers for Disease Control and Prevention's Million Hearts® Hypertension Control Change Package. Adapted from the "Million Hearts® Hypertension Control Change Package" by Wall et al., 2020, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services, 2nd edition, Figure 3, p. 5. (Hypertension Control Change Package (hhs.gov). Copyright 2020 by the U. S. Department of Health and Human Services. Permission to use the framework granted by Wall, H. K.

Appendix D

Measurement and Instrumentation

Figure 3

Hill- Bone Compliance to High Blood Pressure Therapy Scale

TABLE IV. COMPARISON OF FACTOR LOADINGS OF HILL-BONE HBP COMPLIANCE SCALE BETWEEN STUDY 1 AND STUDY 2

No.	Item	Study 1	Study 2
1	How often do you forget to take your HBP medicine?	0.61	0.60
2	How often do you decide not to take your HBP medicine?	0.55	0.72
3	How often do you eat salty food?	0.30	0.43
4	How often do you shake salt on your food before you eat it?	0.18	0.47
5	How often do you eat fast food?	-0.08	0.31
6	How often do you make the next appointment before you leave the doctor's office?*	0.25	0.03
7	How often do you miss scheduled appointments?	0.38	0.55
8	How often do you forget to get prescriptions filled?	0.40	0.64
9	How often do you run out of HBP pills?	0.45	0.68
10	How often do you skip your HBP medicine before you go to the doctor?	0.64	0.59
11	How often do you miss taking your HBP pills when you feel better?	0.82	0.80
12	How often do you miss taking your HBP pills when you feel sick?	0.69	0.76
13	How often do you take someone else's HBP pills?	0.57	0.54
14	How often do you miss taking your HBP pills when you are careless?	0.70	0.71
	Eigenvalue	3.74	4.95
	Percent total variance	0.27	0.35

HBP=high blood pressure; *Reverse coded before analysis; Note: reducing sodium intake subscale: items 3,4,5; appointment keeping subscale: items 6,7; medication taking subscale: items 1,2,8,9,10,11,12,13,14.

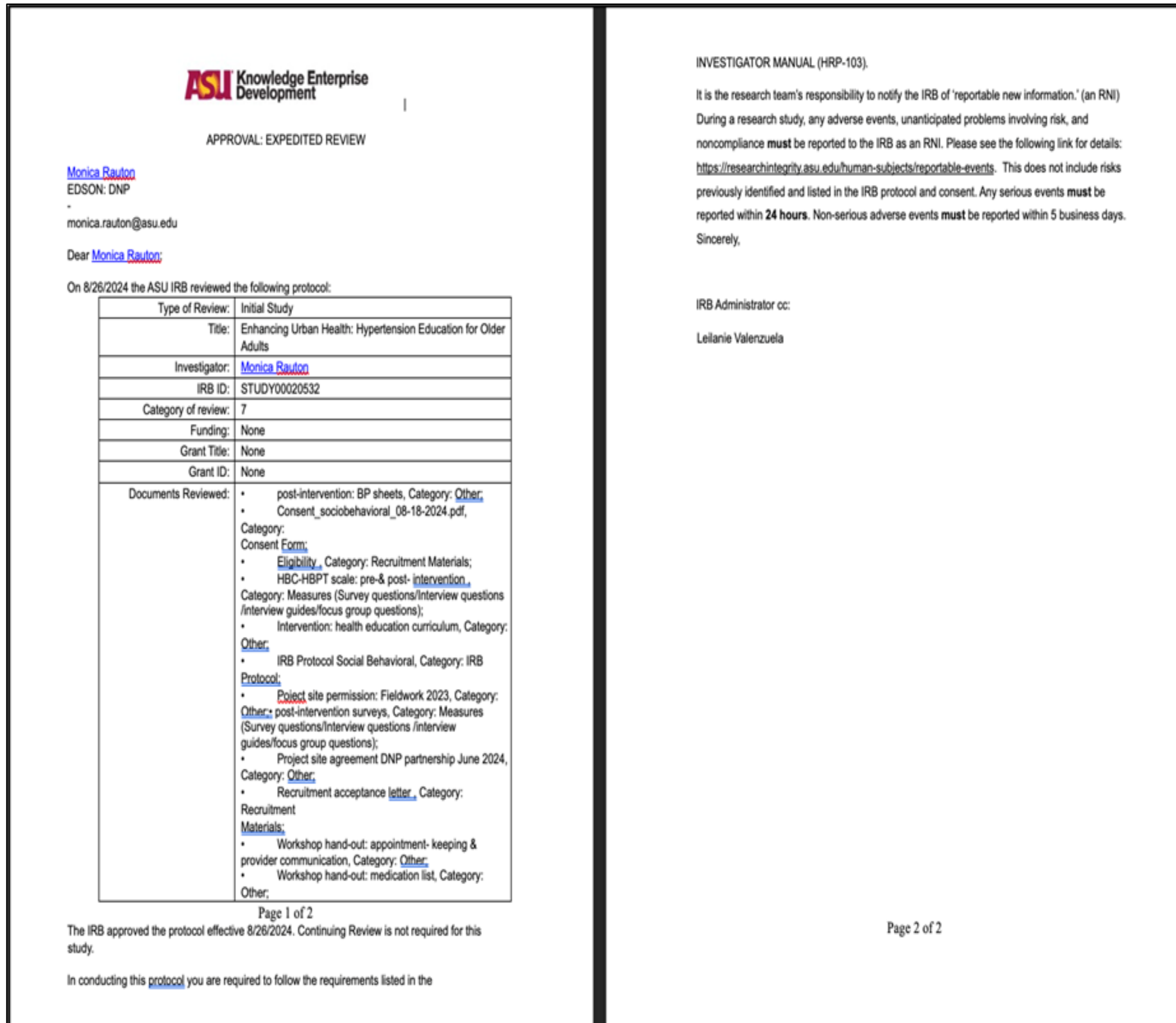
Note. The 14-item scale has broad application across various chronic diseases and conditions and provides a simple method for clinicians in various settings to assess patients ' self-reported compliance levels and plan appropriate interventions. Adapted from "Development and Testing of the Hill-Bone Compliance To High Blood Pressure Therapy Scale," by Kim et al., 2020, Progress in Cardiovascular Nursing, 15(3), Table IV, p. 91 (https://doi.org/10.1111/j.1751-7117.2000.tb00211.x). Copyright 2000 by Le/Jacq Communications, Inc. Licensing agreement for use of chapter/article in print and electronic distribution between the project organizer and Copyright Clearance Center obtained through RightsLink on behalf of John Wiley and Sons.

Appendix E

Institutional Review Board

Figure 4

Arizona State University- Institutional Review Board Expedited Approval



ASU Knowledge Enterprise Development

APPROVAL: EXPEDITED REVIEW

Monica Rauton
EDSON: DNP
-
monica.rauton@asu.edu

Dear Monica Rauton:

On 8/26/2024 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Enhancing Urban Health: Hypertension Education for Older Adults
Investigator:	Monica Rauton
IRB ID:	STUDY00020532
Category of review:	7
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	• post-intervention: BP sheets, Category: Other; • Consent_sociobehavioral_08-18-2024.pdf, Category: Consent Form; • Eligibility , Category: Recruitment Materials; • HBC-HBPT scale: pre-& post- intervention , Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Intervention: health education curriculum, Category: Other; • IRB Protocol Social Behavioral, Category: IRB Protocol; • Poject site permission: Fieldwork 2023, Category: Other;• post-intervention surveys, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Project site agreement DNP partnership June 2024, Category: Other; • Recruitment acceptance letter , Category: Recruitment Materials; • Workshop hand-out: appointment- keeping & provider communication, Category: Other; • Workshop hand-out: medication list, Category: Other;

Page 1 of 2

The IRB approved the protocol effective 8/26/2024. Continuing Review is not required for this study.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

It is the research team's responsibility to notify the IRB of 'reportable new information.' (an RNI) During a research study, any adverse events, unanticipated problems involving risk, and noncompliance **must** be reported to the IRB as an RNI. Please see the following link for details: https://researchintegrity.asu.edu/human-subjects/reportable-events. This does not include risks previously identified and listed in the IRB protocol and consent. Any serious events **must** be reported within **24 hours**. Non-serious adverse events **must** be reported within 5 business days.

Sincerely,

IRB Administrator cc:

Leilanie Valenzuela

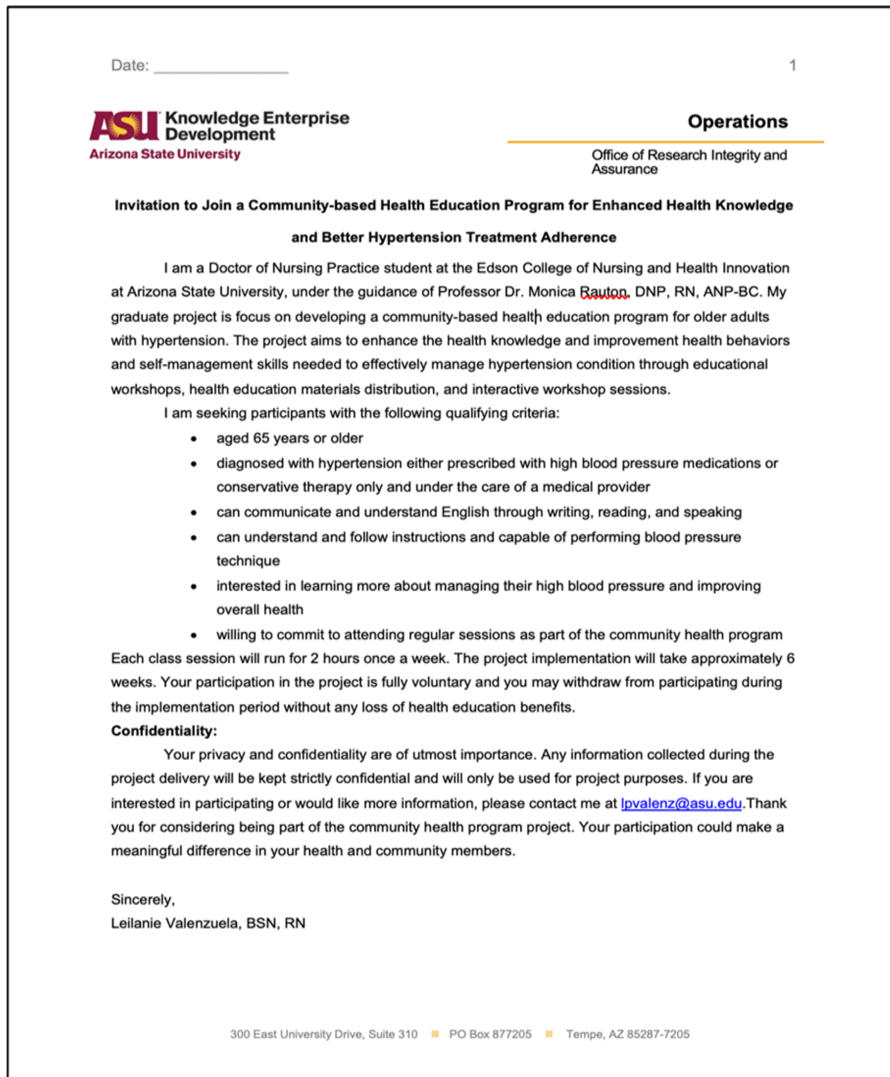
Page 2 of 2

Appendix F

Recruitment & Consents

Figure 5A

Recruitment Flyer



Date: ________________ 1

Knowledge Enterprise Development
Arizona State University

Operations

Office of Research Integrity and Assurance

Invitation to Join a Community-based Health Education Program for Enhanced Health Knowledge and Better Hypertension Treatment Adherence

I am a Doctor of Nursing Practice student at the Edson College of Nursing and Health Innovation at Arizona State University, under the guidance of Professor Dr. Monica Rauton, DNP, RN, ANP-BC. My graduate project is focus on developing a community-based health education program for older adults with hypertension. The project aims to enhance the health knowledge and improvement health behaviors and self-management skills needed to effectively manage hypertension condition through educational workshops, health education materials distribution, and interactive workshop sessions.

I am seeking participants with the following qualifying criteria:

- aged 65 years or older
- diagnosed with hypertension either prescribed with high blood pressure medications or conservative therapy only and under the care of a medical provider
- can communicate and understand English through writing, reading, and speaking
- can understand and follow instructions and capable of performing blood pressure technique
- interested in learning more about managing their high blood pressure and improving overall health
- willing to commit to attending regular sessions as part of the community health program

Each class session will run for 2 hours once a week. The project implementation will take approximately 6 weeks. Your participation in the project is fully voluntary and you may withdraw from participating during the implementation period without any loss of health education benefits.

Confidentiality:

Your privacy and confidentiality are of utmost importance. Any information collected during the project delivery will be kept strictly confidential and will only be used for project purposes. If you are interested in participating or would like more information, please contact me at lpvalenz@asu.edu.Thank you for considering being part of the community health program project. Your participation could make a meaningful difference in your health and community members.

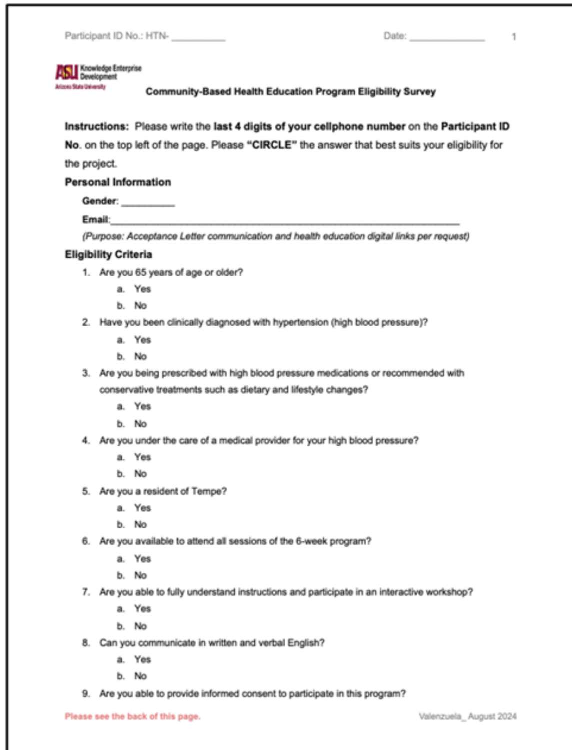
Sincerely,
Leilanie Valenzuela, BSN, RN

300 East University Drive, Suite 310 ▪ PO Box 877205 ▪ Tempe, AZ 85287-7205

Note. The recruitment document template and logo are credited to Arizona State University Knowledge Enterprise Development, Operations, Office of Research Integrity and Assurance. The project organizer developed the detailed document notes.

Figure 5B

Recruitment Eligibility Survey Questionnaire



Participant ID No.: HTN- __________ Date: ______________ 1

Knowledge Enterprise Development
Arizona State University

Community-Based Health Education Program Eligibility Survey

Instructions: Please write the **last 4 digits of your cellphone number** on the **Participant ID No.** on the top left of the page. Please **"CIRCLE"** the answer that best suits your eligibility for the project.

Personal Information

Gender: __________

Email: ____

(Purpose: Acceptance Letter communication and health education digital links per request)

Eligibility Criteria

1. Are you 65 years of age or older?
   a. Yes
   b. No
2. Have you been clinically diagnosed with hypertension (high blood pressure)?
   a. Yes
   b. No
3. Are you being prescribed with high blood pressure medications or recommended with conservative treatments such as dietary and lifestyle changes?
   a. Yes
   b. No
4. Are you under the care of a medical provider for your high blood pressure?
   a. Yes
   b. No
5. Are you a resident of Tempe?
   a. Yes
   b. No
6. Are you available to attend all sessions of the 6-week program?
   a. Yes
   b. No
7. Are you able to fully understand instructions and participate in an interactive workshop?
   a. Yes
   b. No
8. Can you communicate in written and verbal English?
   a. Yes
   b. No
9. Are you able to provide informed consent to participate in this program?

Please see the back of this page. Valenzuela_ August 2024

2

   a. Yes
   b. No

Exclusion Criteria

10. Do you reside in an assisted living or skilled care facility?
    a. Yes
    b. No
11. Are you being cared for fully by a caregiver?
    a. Yes
    b. No
12. Do you have any memory loss or other reasoning issues that affect your ability to manage your blood pressure independently?
    a. Yes
    b. No
13. Do you have physical limitations that prevent you from managing your blood pressure independently?
    a. Yes
    b. No
14. Are you a caregiver of someone with hypertension?
    a. Yes
    b. No

Participant Project Expectations

15. Why are you interested in participating in this health education program?
    ____
    ____
16. Do you have any specific goals or expectations from this program?
    ____
    ____

Declaration

I, hereby, declare that the information provided in this survey is accurate and complete to the best of my knowledge.

Signature: ______________________

Date: ______________________

Valenzuela_ August 2024

Note. The eligibility survey questionnaire was developed by the project organizer based off the eligibility criteria

Figure 5C

Project Participation Consent

Consent: Social Behavioral 1

Consent Form: Social Behavioral

Investigator: Dr. Monica Rauton, DNP, RN, ANP-BC (ASU Academic Mentor)
Co-investigator: *Leilanie Valenzuela, BSN, RN*

Why am I being invited to take part in a project?

We invite you to take part in a research study because you are/have:

a. Aged 65 years old or older
b. Diagnosed with high blood pressure by a medical provider
c. Being treated with prescription blood pressure medications and under the care of a clinical provider.
d. Can communicate and understand English through writing, reading, and speaking
e. Can understand and follow instructions, no memory issues, and capable of performing blood pressure technique
f. Interested in learning more about manage and improving overall health
g. Willing to commit to attending regular sessions as part of the community health program

Why is this community-based health education project being done?

The community-based health education program was chosen as a project due to the increasing needs of the older adults in the community who are dealing with chronic health conditions such as high blood pressure and the lack of sufficient provider-patient clinic time. This issue leads to reduced health learning opportunities for the patients in the community, especially older adults, who are believed to be the vulnerable group in the adult population. The project's development was based on the discussion held in November 2023, which focused on the health education needs of the attendees at the recreation facility. In support of this vulnerable group, the significance of implementing the community-based health education program project will empower older adults to understand their healthcare options, observe medication regimens, adopt healthy habits, improve high blood pressure self-management skills, and recognize the signs of developing health complications. The project aims to enhance the health knowledge and self-management skills needed to manage high blood pressure through educational workshops covering proper blood pressure techniques, blood pressure logs, medication lists, and appointment diaries. Instructional classes will be delivered using slide presentations, video presentations, and

Consent: Social Behavioral 2

printed health education materials will also be distributed. The project is meant to be immersive, interactive, and informative.

How long will the project last?

We expect that individuals will spend about 2 hours, once a week. The project will be implemented for 6 weeks.

How many people will be studied?

We expect about minimum of 15 participants and maximum of 30 participants to participate in the project.

What happens if I say yes, I want to be in this project?

If you are fit to join the project, you are expected to:

- Attend class sessions covering topics such as high blood pressure information, recommended diet, medication management, blood pressure techniques, and clinic appointments.
- Participate in the classes and workshops, feedback sessions, and evaluation of the program.
- Participate in the evaluation of the effectiveness of the program.

What happens if I say yes, but I change my mind later?

Participation in the program is fully voluntary, and you can withdraw at any time during the project implementation and not lose the benefits nor hold it against you.

Is there any way being in this study could be bad for me?

Your privacy and confidentiality are of utmost importance. Any information collected during the project delivery will be kept strictly confidential and will only be used for project purposes. There is no anticipated physical risk associated with the project. Potential privacy risk is addressed by providing a lock box at the site. Email address provided will be used for the notification of acceptance of a participant to the project and ONLY upon participant requests for digital links of health education distribution.

Will being in this study help me in any way?

We cannot promise any benefits to you or others from your taking part in this project. However, possible benefits include:

a) Better understanding of high blood pressure and effectively manage it.
b) Develop the proper skills in blood-pressure monitoring, effective medication management, and improved blood pressure control.
c) Have the opportunity to contribute to the potential future sustainability of carrying out the community-

Consent: Social Behavioral 3

based health education to other adult recreation centers in the city.
d) A better health outcome which came from being empowered, aware, and efficient in self-management of your health.

What happens to the information collected for the research?

Efforts will be made to limit the use and disclosure of your personal information, including project records, to people who have a need to review this information. We cannot promise complete secrecy. The results of this study may be used in reports, presentations, or publications but your name will not be used. When collecting recruitment and data collection documents, we will not include any patient identifiers. Participants will drop off these documents in a secured lockbox. After the project ends, we will delete all participant-provided emails from our records, paper documents received will be shredded, digital transfer of the project data and final project manuscript will be stored at Arizona State University's secured server and deleted after 3 years. Additionally, the project site administrative staff will receive the program evaluation results. If there is a request for potential community implementation, we will share the project details and results with the city's community human health services.

Who can I talk to?

If you have questions, concerns, or complaints, talk to the project team: **Leilanie Valenzuela, BSN, RN** (project co-investigator), send an email to: lpvalenz@asu.edu and to Dr. Monica Raudon, DNP, RN, ANP-BC (primary investigator and project mentor) at monica.rauton@asu.edu.

This research is titled: Enhancing Urban Health: Hypertension Education for Older Adults. It has been reviewed and approved by the Social Behavioral IRB. You may talk to them at (480) 965-6788 or by email at research.integrity@asu.edu if:

- Your questions, concerns, or complaints are not being answered by the project team.
- You cannot reach the project team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a project participant.
- You want to get information or provide input about this project.

Consent: Social Behavioral 4

Signature Block for Capable Adult

Your signature documents your permission to take part in this project.

Signature of participant   Date

Printed name of participant

Signature of person obtaining consent   Date

Printed name of person obtaining consent

My signature below documents that the information in the consent document and any other written information was accurately explained to, and apparently understood by, the participant, and that consent was freely given by the participant.

Signature of witness to consent process   Date

Printed name of person witnessing consent process

Note. The project participation consent comprises participants consenting to voluntarily participate in the program activities and email communication. The consent will be provided to recruit individuals. Consent was developed by the project organizer.

Appendix G

Feedback & Evaluation

Table 2A

Compliance to Hypertension Therapy (Actual Survey Pre- and Post-Intervention)

No.	Item	Response: 1. None of the time. 2. Some of the time 3. Most of the time 4. All of the time			
		1	**2**	**3**	**4**
1.	How often do you forget to take high blood pressure medicine?				
2.	How often do you decide NOT to take high blood pressure medicine?				
3.	How often do you eat salty food?				
4.	How often do you shake salt on your food before you eat?				
5.	How often do you eat fast food?				
6. *	How often do you make the next appointment before you leave the doctor's office?				
7.	How often do you miss scheduled appointments?				
8.	How often do you forget to get prescriptions filled?				
9.	How often do you run out of high blood pressure pills?				
10.	How often do you skip your blood pressure medicine before you go to the doctor?				
11.	How often do you miss taking your high blood pressure pills when you feel better?				
13.	How often do you miss taking you high blood pressure pills when you feel sick?				
14.	How often do you take someone else's high blood pressure pills?				
15.	How often do you miss taking your high blood pressure pills when you are careless?				

Note: *Reverse coding. The table represents the actual document which will be used for the CBHEP project for the pre- and post- evaluation based on the H-BCHBPT scale recreated by the project organizer. The HBC-HBPT scale adapted from "Development and Testing of The Hill-Bone Compliance to High Blood Pressure Therapy Scale," by Kim et al., 2020*, Progress in Cardiovascular Nursing*, 15(3), Table IV, page 91. (https://doi.org/10.1111/j.1751-7117.2000.tb00211.x). Copyright 2000 by Le/Jacq Communications, Inc.

Table 2B

Health Education Delivery Survey

Health Education Delivery Method	**Responses**	
	Yes	**No**
Are you satisfied with the health education session?		
Was the information easy to understand?		
Did you like the way the information was taught (like presentations and discussions)?		
Were the materials (like handouts and brochures) helpful?		
Suggestions to improve the class:		

Note: The Yes/No responses make the survey even more straightforward and easier for OAs to complete. The survey questionnaire will be distributed during the second week of the class session and in the sixth week to evaluate areas for improvement in the health education delivery methods for weeks three to six. The sixth-week survey will assess the final improvement of the CBHEP for the long-term implementation plan. The questionnaire was developed by the project organizer.

Appendix H

Data Collection Tools

Figure 6

Self-monitoring Blood Pressure Log Sheet

Participant ID No: HTN-__________ Date: ________ 1

DNP Project: Self-monitoring Blood Pressure Log sheet

Purpose: This log can help you track your blood pressure throughout the week and pinpoint any patterns or issues affecting your blood pressure. It's a useful tool for both you and your healthcare provider to monitor and manage hypertension well.

Instructions for Use: Please write the **last 4 digits of your cellphone number** on the Participant ID No. section. Please bring this log sheet every class session.

1. **Day and Date:** Write the current day and date.
2. **Time:** Indicate the time of measurement (e.g., morning, afternoon, evening).
3. **Systolic (mm Hg):** Record the systolic pressure (the top number).
4. **Diastolic (mm Hg):** Record the diastolic pressure (the bottom number).
5. **Heart Rate (bpm):** Record your heart rate in beats per minute.
6. **Notes:** Include any relevant notes such as activities before measurement, medications taken, or how you're feeling

Week 1

Day	Date	Time	BP reading		Heart Rate (beats per minute)	Notes (example: position, resting, upon waking up, stressed, relaxed, etc.)
			Systolic (top number)	Diastolic (bottom number)		
Monday		Morning				
		Afternoon				
		Evening				
Tuesday		Morning				
		Afternoon				
		Evening				

Please see the back of this page.

Template by: Valenzuela, July 2024

Participant ID No: HTN-__________ Date: ________ 2

Day	Date	Time	Systolic BP	Diastolic BP	Heart Rate	Notes
Wednesday		Morning				
		Afternoon				
		Evening				
Thursday		Morning				
		Afternoon				
		Evening				
Friday		Morning				
		Afternoon				
		Evening				
Saturday		Morning				
		Afternoon				
		Evening				
Sunday		Morning				
		Afternoon				
		Evening				

Template by: Valenzuela, July 2024

Note. The BP log template, developed by the project organizer, will be distributed to the participants at the end of the class session in Week 1 and utilized throughout the project. Participants will be advised to record their BP throughout the week and identify any patterns or factors affecting their BP.

Appendix I

Logic Model

Table 3

Goal: To enhance health literacy of older adults with hypertension and subsequently, improve treatment adherence.

INPUTS	OUTPUTS		OUTCOME			IMPACTS
	Activities	*Target*	*Short*	*Medium*	*Long*	
Time: research data, coordination, grant writing, planning, staff education, recruitment process	Develop a structured and tailored HE curriculum to HTN literacy: didactic and skills workshop	Older adults with HTN, recommended treatment: anti-hypertensive medications	Increased HTN literacy, treatment adherence awareness	Proficiency in identification of symptom, drug safety, and appropriate use of medical services	Positive learning response and enhanced SMB	Enhance HL, treatment adherence, SMB and SE
Program activities and Fiscal resources: travel, office and printing supplies, education materials, blood pressure device, and snacks	Small group classes: 10 per session (based on recruited number)	Enhanced learning experience and peer-support	Willingness to apply learned changes about medications, BP control, and HTN home monitoring	Proficiency with use of BP device and technique demonstration.	Improve patient HL and HTN outcomes through positive feedback from BP logs and HL teach-back delivery.	Improved BP values and healthier and longer lifespan
Partnership contribution: training, mentorship, and community outreach	Encourage participant engagement and provide learning resources for home	Length of instruction sessions: 2 hours/week x 6 weeks	Improvement in SMB and treatment adherence	Increase participant eagerness in class participation and skills performance.	Increase motivation and engagement in completing BP monitoring logs and medication list	Establishment of a fully functional and funded medical services for older adult centers
Tool: HBCHBPT	Pre- & post-implementation evaluation: HBCHBPT scale (Kim et al., 2000).	Project outcomes measure using HBCHBPT	Report of increase HL and HTN management adherence	Competency in HTN home management application	Post-evaluation of HL and HTN treatment adherence by minimum 40% from baseline	Sustained HTN control and continued peer support for new site attendees.

Assumptions:
1. Multiple HE sessions can effectively improve HTN knowledge and decrease BP values (Khanal et al., 2021).
2. Use of SMBP and SMB techniques leads to better BP control (McManus et al., 2020).
3. The HBCHBPT scale's high compliance scores predicted significant lower BP levels related with BP control at pre- and post-intervention (Kim et al., 2022).

Keys: **BP**- blood pressure, **HBCHBPT**- Hill-Bone compliance to high blood pressure therapy scale, **HE**- health education, **HL**- health literacy, **HTN**- hypertension, **SE**- self- efficacy, **SMB**- self-management behaviors, **SMBP**- self- measured blood pressure

Appendix J

Project Budget

Table 4A

Budget Objective: Allocate funds for an urban health education program targeting hypertensive older adults to enhance health literacy and hypertension treatment adherence for better health outcomes.

<table>
<tr><td>Project name:</td><td colspan="5">Enhancing Urban Health: Hypertension Education for Older Adults</td></tr>
<tr><td>Project organizer</td><td colspan="5">Leilanie Valenzuela (Co-PI)</td></tr>
<tr><td>Funding</td><td colspan="5">The Co-PI incurs total expenditures listed. External funding: Arizona State University and city government</td></tr>
<tr><td>Project start date</td><td colspan="5">August 3rd week, 2024</td></tr>
<tr><th>Cost Type</th><th>Total Cost</th><th>Project Phase</th><th>Cost Type</th><th>Total Cost</th><th>Project Phase</th></tr>
<tr><td>Salary: Co- PI</td><td>$720.00</td><td>P, D, E</td><td>Salary: Site Champion</td><td>$0.00</td><td>P, D, E</td></tr>
<tr><td>Participant Fee</td><td>$0.00</td><td>D, E</td><td>Facility Fees</td><td>$ 0.00</td><td>D, E</td></tr>
<tr><td>Statistical Software</td><td>$0.00</td><td>D, E</td><td>Total project Cost</td><td colspan="2">$3445.00</td></tr>
<tr><td>Equipment & Printing</td><td>$1,775.00</td><td>P, D</td><td>Savings</td><td colspan="2">$3445. 00</td></tr>
<tr><td>Validated BP device</td><td>$150.00</td><td>D, E</td><td rowspan="3">Budgeted expense funding for OA community services</td><td rowspan="3" colspan="2">$ 82,860.00</td></tr>
<tr><td>Office Supplies</td><td>$200.00</td><td>P, D, E</td></tr>
<tr><td>Travel Expenses</td><td>$600.00</td><td>P, D, E</td></tr>
</table>

Note: The city's general funding for the OA community services at the project site for fiscal year 2023- 2024, amounted to $82, 860.00 tabulated as expenses in the fiscal report (Tempe, n. d.). From a fiscal perspective, the CBHEP will save the city at least $3, 445.00 from the instructional class funding deducted from the $82, 860.00 funds.

Table 4B

Budget Proposal Itemization

Cost Type		Unit	Amount	Time (hours/week)	Cost Components
Salary: PI		1	$0.00	varies	Mentorship & project guidance; Employed by Arizona State University
Salary: Co-PI		1	$60.00	2 H/W	Project organizer
Consultant Fees		1	$0.00	varies	Statistical consultation. Employed by Arizona State University
Participants' Fee		≈15 persons	$0.00	2 H/W	Potential participants: OAs with HTN
Statistical software		n/a	$0.00	n/a	*Intellectus Statistics* software package
Equipment	Printer	1	$100.00	n/a	Required for literature review, project development, planning and coordination, patient education materials and presentation.
	Computer	1	$1,500.00		
Printing supplies	Toner	3	$45.00		Recruitment flyers, BP and medication logs, survey materials for potential participants.
	Printing paper	4	$10.00		
Validated BP device		15	150	2 H/W	Required for SMBP workshop and home use. Participant use for home BP monitoring and logs
Office supplies	Pens	15	$20.00	n/a	BP and medication logs, workshop activities
	BP logbooks		$180.00		
Travel Expenses		$100	1 session weekly	n/a	Gas & class session refreshments
Salary: Site Champion		1	$0.00	2 H/W	Collaborate with and assist project organizers; facilitate participant engagement and provide project feedback.
Facility Fees		1	$0.00	2 H/W	The site champion stipulates no fees

Appendix K

Data Analysis

Table 5A

Descriptive Statistics for Age Demographic

Variable	*M*	*SD*	*n*	Min	Max
Age	76.00	5.42	7	66.00	82.00

Note. '-' indicates the statistic is undefined due to constant data or an insufficient sample size.

The average age of the sample was 76 and the age ranged from 66 to 82.

Table 5B

Frequency Table for Demographic Variables

Variable	***n***	**%**
Gender		
Female	4	57.14
Male	3	42.86
Frequency_BP_Checks		
Daily	6	85.71
Monthly	1	14.29

Note. Due to rounding errors, percentages may not equal 100%. Majority of the sample are white older adults (n = 7). Most of the sample are female 4 (57%) and the remainder were male 3 (43%). Most of the sample monitors their BP daily 6 (86%) and one person checks their BP once a month (14%).

Table 5C

Frequency Table for Class Attendance over a Six- Week Period

Variable	*n*	%
Attendance_Week_4		
Present	5	71.43
Absent	2	28.57
Attendance_Week_6		
Present	6	85.71
Absent	1	14.29

Note. Due to rounding errors, percentages may not equal 100%. The entire sample had a perfect attendance for the program during Weeks 1, 2, 3, and 5. However, Week 4 experienced a decline, with 5 attendees (71%) resulting in two participants (29%) being absent. Attendance saw a slight improvement in Week 6, six were present (86%), leaving one participant (14%) absent.

Appendix L

Data Analysis Results

Table 6A

Pre-Intervention: Compliance with Hypertension Therapy Behavior based on the Hill-Bone Compliance to Hypertension Therapy Scale

Domain	Variable	*M*	*SD*	*n*	Min -Max
Medication Adherence (MA)	Pre1_MA_MissedDoseBPMed	2.67	0.94	7	1.00 - 4.00
	Pre2_MA_PlannedMedOmission	4.00	0.00	7	4.00 - 4.00
	Pre8_MA_ForgetPresc	4.00	0.00	7	4.00 - 4.00
	Pre_9_MA_OutofMeds	3.83	0.37	7	3.00 - 4.00
	Pre10_MA_PreVisitSkipMed	4.00	0.00	7	4.00 - 4.00
	Pre11_MA_SkipMedWhenBtr	3.83	0.37	7	3.00 - 4.00
	Pre12_MA_SkipMedWhenSick	4.00	0.00	7	4.00 - 4.00
	Pre13_MA_UseOthMeds	4.00	0.00	7	4.00 - 4.00
	Pre14_MA_MedDoseNeglect	3.83	0.37	7	3.00 - 4.00
Sodium Intake (SI)	Pre3_SI_ConsumedSaltyFood	2.86	0.38	7	2.00 - 3.00
	Pre4_SI_AddSaltToFood	3.86	0.38	7	3.00 - 4.00
	Pre_5_SI_EatFastFood	3.43	0.53	7	3.00 - 4.00
Appointment Keeping (AK)	Pre6_AK_BookNextAppoint	2.86	1.07	7	1.00 - 4.00
	Pre7_AK_MissedAppts	3.86	0.38	7	3.00 - 4.00

Note. '-' indicates the statistic is undefined due to constant data or insufficient sample size. Pre-intervention scores ranged from 2.67 to 4.00, with variability across several items from each domain.

Table 6B

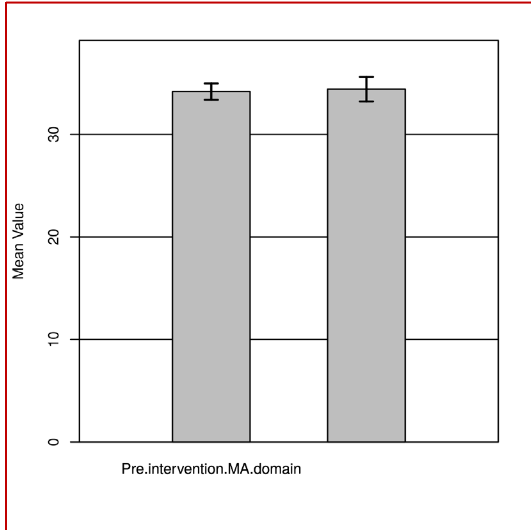
Post-Intervention: Compliance with Hypertension Therapy Behavior based on the Hill-Bone Compliance to Hypertension Therapy Scale

Subscales	Variable	*M*	*SD*	*n*	Min - Max
Medication Adherence (MA)	Post1_MA_MissedDoseBPMed	3.83	0.37	7	3.00 - 4.00
	Post2_MA_PlannedMedOmission	4.00	0.00	7	4.00 - 4.00
	Post8_MA_ForgetPresc	4.00	0.00	7	4.00 - 4.00
	Post9_MA_OutofMeds	4.00	0.00	7	4.00 - 4.00
	Post10_MA_PreVisitSkipMed	4.00	0.00	7	4.00 - 4.00
	Post11_MA_SkipMedWhenBtr	4.00	0.00	7	4.00 - 4.00
	Post12_MA_SkipMedWhenSick	4.00	0.00	7	4.00 - 4.00
	Post13_MA_UseOthMeds	4.00	0.00	7	4.00 - 4.00
	Post14_MA_MedDoseNeglect	4.00	0.00	7	4.00 - 4.00
Sodium Intake (SI)	Post3_SI_ConsumedSaltyFood	3.86	0.38	7	3.00 - 4.00
	Post4_SI_AddSaltToFood	4.00	0.00	7	4.00 - 4.00
	Post5_SI_EatFastFood	4.00	0.00	7	4.00 - 4.00
Appointment Keeping (AK)	Post6_AK_BookNextAppoint	4.00	0.00	7	4.00 - 4.00
	Post7_AK_MissedAppts	4.00	0.00	7	4.0 - 4.00

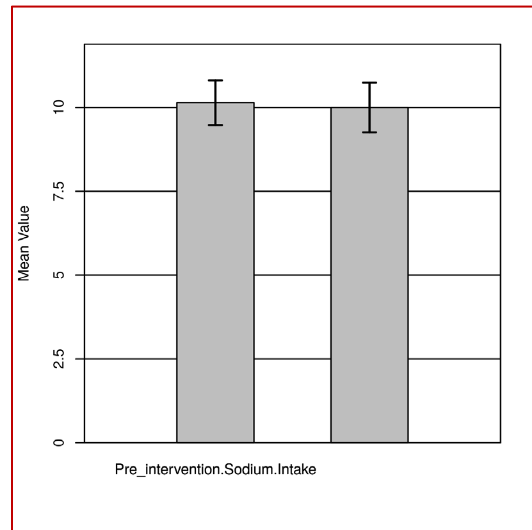
Note. '-' indicates the statistic is undefined due to constant data or insufficient sample size. Post-intervention, all items scored a perfect 4.00, except for one variable, *MissedDoseBPMed* (*M* = 3.83). *SD* dropped to 0.00 on nearly all items post-intervention, indicating increased consistency among participants.

Table 6C

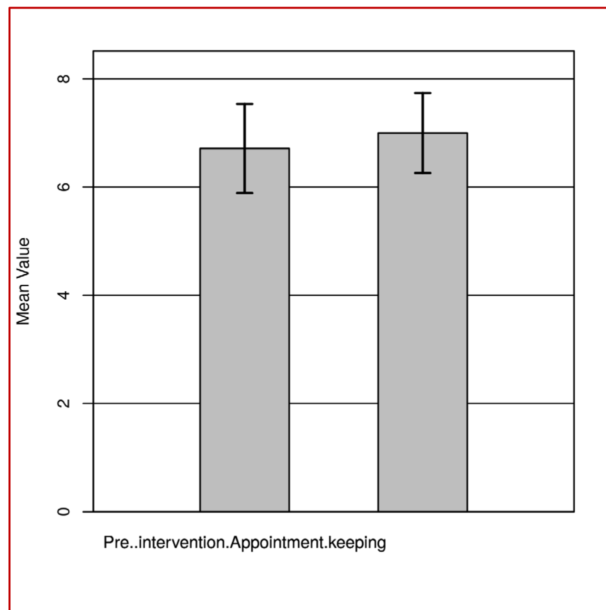
Paired t-test for Pre- & Post- interventions: Compliance with Hypertension Therapy Behavior based on the Hill-Bone Compliance to Hypertension Therapy Scale



The means of Pre-intervention MA domain and Post-intervention MA domain with 95.00% CI Error Bars



The means of Pre-intervention Sodium Intake and Post-intervention Sodium Intake with 95.00% CI Error Bars



The means of Pre-intervention Appointment-keeping and Post-intervention Appointment-keeping with 95.00% CI Error Bars

Appendix M

Data Analysis Results

Table 7

Average Systolic and Diastolic Blood Pressure Trends over Time (Secondary Outcome)

Variable	*M*	*SD*	*n*	Min	Max
Baseline_ Systolic	131.57	13.48	7	118.00	155.00
Week_1_Systolic_BP	130.57	13.70	7	117.00	150.00
Week_2_Systolic_BP	129.86	12.02	7	117.00	150.00
Week_3_Systolic_BP	126.71	9.39	7	116.00	142.00
Week_4_Systolic_BP	126.71	7.97	7	119.00	140.00
Week_5_Systolic_BP	128.43	9.52	7	115.00	142.00
Baseline_ Diastolic	76.29	9.79	7	65.00	93.00
Week_1_Diastolic_BP	74.14	7.56	7	62.00	83.00
Week_2_Diastolic_BP	72.14	7.03	7	61.00	78.00
Week_3_Diastolic_BP	71.14	7.36	7	60.00	80.00
Week_4_Diastolic_BP	70.86	6.89	7	61.00	80.00
Week_5_Diastolic_BP	72.14	6.26	7	62.00	80.00

Note: '-' indicates the statistic is undefined due to constant data or an insufficient sample size.

The data showed a general trend of decreasing SBP and DBP readings from baseline through Week 5, suggesting potential improvement in BP control