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UNIVERSITY OF SAN DIEGO
Hahn School of Nursing and Health Science: Beyster Institute for Nursing Research

DOCTOR OF NURSING PRACTICE PORTFOLIO

by

Belinda Akakpo Maxwell

A portfolio presented to the

FACULTY OF THE HAHN SCHOOL OF NURSING AND HEALTH SCIENCE:
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UNIVERSITY OF SAN DIEGO

In partial fulfillment of the requirements for the degree

DOCTOR OF NURSING PRACTICE
May 2019

**The Roles of an Evidence-Based Weight Management Protocol in
Hypertension Control**

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February 10, 2019

The Roles of an Evidence-Based Weight Management Protocol in Hypertension Control

Abstract

Purpose: The purpose of this project is to evaluate the impact of a healthcare provider-led protocol for patients with hypertension (HTN) and weight loss needs to improve weight control, cardiovascular risk and quality of life.

Background: Evidence shows that a 1.2-kg weight loss can reduce systolic blood pressure (SBP) by 3.8mmHg. Thus, a 10kg (22lbs) weight loss is likely to yield a SBP decrease of as much as 32mmHg. Such results would positively impact quality of life and costs. The simple approach of instructing patients to eat less and increase physical activity to lose weight often fails over time, especially when they lack sustained encouragement leading to decreased willpower, fewer efforts, and failure of their weight loss program.

Process: This evidence-based project was built on the Iowa Model in an outpatient setting. Participants were enrolled in a weight loss program and retained by using a multimodal strategy, which included motivational interviewing, community involvement, and frequent follow-ups. The Glasgow's 5A's of behavior change engages participants by shifting the attention from the traditional weight loss needs to health outcomes. We ASKed for permission to discuss weight management. We ASSESSed participants' risk factors. We ADVISEed on benefits of weight loss and options. We AGREEed on SMART goals. We ASSISTed by promoting trust, collaboration, and empowerment.

Outcomes: Weight loss, obesity parameters, blood pressure, and quality of life outcomes are pending.

Conclusion: This project is meant to empower participants to successfully adhere to a weight loss program to better control their HTN. It ultimately aims at improving wellbeing leading to healthier communities. Successful results may lead to improved blood pressure management and increased quality of life.

Key words: lifestyle change, lifestyle modification, lifestyle choice, lifestyle redesign, obesity, increased BMI, hypertension, increased blood pressure, high blood pressure

The Roles of an Evidence-Based Weight Management Protocol in Hypertension Control

Introduction

Hypertension is the most common diagnosis given in primary care. Affecting 1 out of 3 individuals every year, about 395 000 individuals die due to hypertension in the United States (Persoskie, Kaufam, Levy, 2014). It has become common knowledge that poor hypertension control leads to major organs damage, organ failure, and ultimately, to death. The evidence demonstrates that weight control is directly correlated to adjusted risk of incident hypertension, decreased cardiovascular risk and associated comorbidities, and improved quality of life (Kaplan & Rose, 2015). Yet, the prevalence of obesity in the United States was 39.8% and affected about 93.3 million US adults in 2015-2016 (CDC, 2018). Running a nurse practitioner-led hypertension control and weight loss program to improve hypertension requires the use of an evidence-based weight management protocol. This review focuses on available evidence attesting to an evidence-based process to implement such a protocol successfully.

Material and Methods

The PICO Question

	Condition/diseases	Age (Adult/Pediatric /NOS)	Other health criteria
Patient	-Increased BMI (>30) -Hypertension diagnosis or Risk for hypertension -Cardiovascular risk	Adults	-Outpatient setting -Pre Diabetes or Diabetes
Intervention	Evidence-based Weight management program		
Comparison	Standard (patient education and or materials)		
Outcome	Reduced hypertension / sustainable or long term weight loss / reduced cardiovascular risk / improved quality of life		

In adult patients affected with weight loss needs and diagnosed with hypertension or at risk for hypertension, how can a nurse practitioner-led hypertension control and weight loss program, in addition to the standard verbal education and/or printed information given during clinic visits improve weight control, cardiovascular risk and quality of life?

Search Strategy

We conducted a computerized literature search using the databases Cumulative Index to Nursing & Allied Health (CINAHL) and PubMed. We limited our sources to systematic reviews, randomized control trials (RCTs) done with adult participants in English language made available in the past five years and published in academic journals.

An advanced search in CINAHL using the subject terms (MM "Life Style Changes") OR ("lifestyle modification*" or "lifestyle choice*" or "lifestyle redesign") (MM "Hypertension+") OR ("high blood pressure" OR "increased BMI") in Advanced Search with the search mode Boolean/Phrase gave us 383 articles. We limited our results to articles published from 2014 to 2019, which gave us 123 articles. We restricted our results to articles published in academic journals, which narrowed the results to 43 articles. We limited our results to English language, which narrowed the results to 42. We narrowed the search by age to all adults and found 17 articles.

PubMed: ("hypertension"[MeSH Terms] OR "hypertension"[All Fields]) AND ("obesity"[MeSH Terms] OR "obesity"[All Fields]) AND ("life style"[MeSH Terms] OR ("life"[All Fields] AND "style"[All Fields]) OR "life style"[All Fields] OR "lifestyle"[All Fields]) AND ("Changes"[Journal] OR "changes"[All Fields]) Gave way to 943 articles. We narrowed the search to the past 5 years and we obtained 274 articles. We limited the search to humans and found 202 articles. We limited the search to English language and obtained 184 articles. We limited the search to core clinical journals, which resulted in 14 articles. Among these articles, we selected five that we found pertinent. We added other articles available in the evidence that we found useful.

Discussion

In this review, we analyze the role of lifestyle measures on the improvement of hypertension and increased BMI in adults focusing on RCTs as the highest level of evidence.

Synthesis of Study Results: interpretation of the results and report writing

According to the articles found in CINAHL and PubMed, lifestyle changes performed in the context of a structured program are highly likely to bring sustainable health improvement in

participants. Particularly, when elements of a comprehensive lifestyle modification are implemented in a culturally competent way, participants are more likely to embrace the new approach to their lifestyle design and to adhere to evidence-based principles of cardiovascular risk prevention.

As a result of this information we began the implementation of a lifestyle modification program in a community clinic in San Diego, according to the JNC 8 Hypertension guidelines on lifestyle changes. Partnering with a large church-based community through an outreach ministry to potentially disseminate as broadly as doable and to give room for future expansion.

Target Population

Potential participants were patients of an outpatient clinical setting previously diagnosed with hypertension or who had increased BMI beyond 30. 165 patients met the eligibility criteria and were invited into the program. [Artifact 2: Patient Information Spreadsheet].

Clinic-Based Project Method

An approval for this evidence-based project was obtained from the local ethical committee. Potential participants were then invited into the program, within the guidelines of the IRB approval. Just as in previous similar evidence-based implementations and studies, data including blood pressure, and anthropometric measurements (weight, height, and waist circumference) were collected during meetings with participants as they came to the clinic. Then, we discussed the impact of increased weight, hypertension and cardiovascular risks. As a next step, we set SMART (Specific, Measurable, Attainable, Realistic, Timely) goals with participants regarding their blood pressure and weight. The diet recommended was mainly promoting the Dietary Approaches to Stop Hypertension (DASH) diet with increased fruits and vegetables and decreased fat and calorie consumption.

Sample

The project was implemented in an outpatient clinic; participants were above the age of 18 years to meet IRB approval. 165 eligible patients were invited, however only three were actively in the program.

Inclusion Criteria

- 1) 18 years or older
- 2) Previously diagnosed with hypertension
- 3) Blood pressure equal or greater than 135/80
- 4) Bmi > 25

Exclusion Criteria

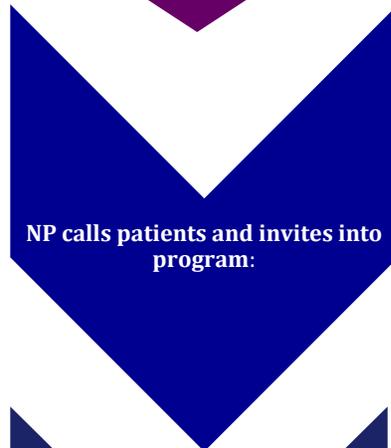
- 1) Bed-ridden
- 2) Younger than 18 years
- 3) Cognitive impairment
- 4) Inability to comply with the protocol

Performance

Process of Implementation of the Project



- **HCPs identify and refer patients who could benefit from program to NP**
- **NP accesses the Patient's information to verify that they meet criteria**



- Explain purpose of program
- **Assess patient's interest**
- **Discuss** self-care needs
- **Set up first appointment**



- Patient confirms **taking all medications as prescribed**
- NP takes BP, waist circumference, weight as pre-data
- NP educates patient on lifestyle changes recommendations per JNC8 Hypertension Guidelines
- **Patient follow-up appointments: data gathering & counseling**

Assessment

Informative questions were asked at the first visit:

--How long as it been since you saw a provider for a routine checkup or general physical assessment. (Within the past year, within the past 2 years, within the past 5 years, they do not remember)

--Have you ever been a smoker? Do you currently smoke? Would you like to quit?

--Do you exercise? What do you do? How often?

--do you drink alcohol? How much? How often?

--What is your typical diet? Tell me what you ate in the past 24hours

--Have you ever been told that you have high blood pressure or hypertension?

IF YES

--Do you take any blood pressure medication at this time? How many?

--What have you heard from healthcare providers about what you can do to improve or lower your blood pressure?

- Change your eating habits (YES/NO)
- Stop smoking (YES/NO)
- Decrease how much alcohol you drink (YES/NO)
- Exercise (YES/NO)
- Take your medication (YES/NO)

--Do you measure your blood pressure at home? How often? When during the day? (Information given to measure BP 1-2 hours after taking BP medication if applicable)

--Do you weigh yourself at home? How often? When?

--What is your height?

--We measured weight and waist circumference when participants allowed

--We calculated BMI

--We measured blood pressure with an automated BP monitor, with the participant being seated comfortably in a chair, feet on the floor, and legs uncrossed for at least five minutes before the measurement, to follow the American Heart association guidelines.

Education was reinforced on the health measures to which participants agreed to adhere.

Establishing SMART goals

SMART Goals were set with participants to foster their empowerment before a follow up appointment was set with each participant before the end of the visit.

Short-term goals:

1. Adhering to a therapeutic lifestyle modification and developing new habits
2. Changing mindsets regarding eating and physical activity
3. Initiating weight loss

Long-term goals:

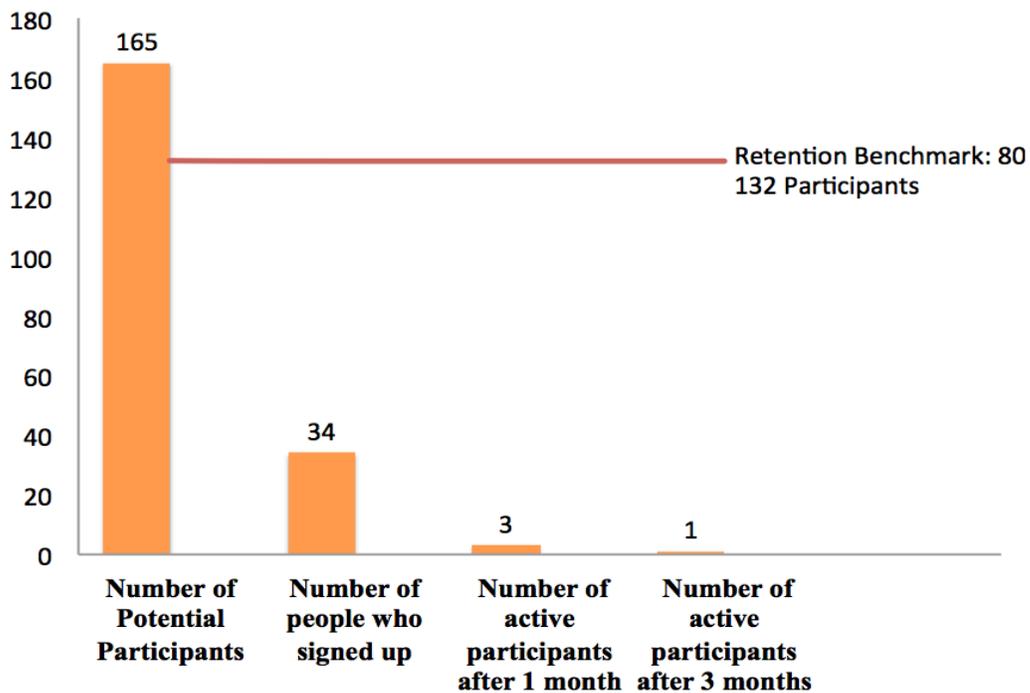
1. Advancing and sustaining weight loss
2. Obtaining decreased blood pressure
3. Improving quality of life

Measurement Period

Our goal was to measure data over a period of at least 6 month to a year, according to the participants' willingness to remain in the program. However, we encountered difficulties to canvass a significant number of participants within the timeframe available to launch the program because potential participants would cancel their appointment or not show to the clinic on the day of their appointment altogether.

Few candidates became active participants among which only a few consistently pursued the goals set and currently actively continue the program with a strong desire to complete it. The rest of the group of participants who signed up never came to their first appointment despite several reminders. When called at the time of the appointment they would either reschedule and not show to the subsequent appointments despite reminders, or would not answer the calls or return any call. Consequently, the number of active participants became so small by the three months mark that we were forced to interrupt our process and to question quality of care delivery as well as the effectiveness of the current healthcare practices of teaching lifestyle changes during office visits only.

Clinic-based Phone calls for Participants Recruitment:



- Education & Invitation by Health Center Staff
- Sense of duty /submission
- =>Low retention

Results

Strengths

The team had developed a strong flow of communication, which was advantageous while facing this shortcoming. Exchanges of thoughts led to questions on how to enhance healthcare outcomes. In turn, these questions triggered a new inquiry leading to further review of literature, according to the fluidity of the Iowa Model. The team optimized its efforts by modifying its recruitment criteria, merging with a Diabetes prevention program that the team was about to launch, since both programs' interventions would be focused on lifestyle modifications. The ultimate objective was to implement the project with a pilot group with possible dissemination in the future. A closer look at the barriers faced helped mitigating future risks of failure of the now new project planning.

Barriers

Invitations were done via phone calls to the clinic's eligible patients. Most patients invited into the program would neither answer the phone nor return the call. Often, the patients would decline the offer, or not show up to their appointments despite reminder calls 24 to 48 hours prior and even on the day of the appointment. Individuals who refused to participate explained that they were not interested. Some participants who previously set up an appointment at the clinic were called on the day of the appointment, however would neither answer the phone nor come to their appointment. Or rather, they would answer the phone to request to reschedule. Some participants were thus rescheduled four or five times and still did not show to their first appointment.

Another barrier was some of the participants' lack of transportation. Some agreed to meet at their home as a solution or for convenience. Although great willingness to participate was

expressed, such participants also experienced decreased physical mobility, with a limited ability to perform any independent physical activity beyond the minimum required for their activities of daily living. These participants depended on family members who were not home at the time of the visit. As a result, planning was limited because their ability to participate in any regular physical exercise such as a class was tied to their family members' schedule. The lack of transportation also limited other participants at home who declined meeting in their home setting.

A third barrier was the lack of confidence in the accuracy of some of the participants' statements. For instance, some participants would report cooking for themselves and observing a low-sodium and low-cholesterol diet, however this statement was hard to picture considering their currently increasing BMI, and their increased blood pressure at rest despite having taken their home antihypertensive medications two to three hours before the blood pressure measurements. Also, limited transportation affected the participants' ability to fully decide on the nature of food available to them, and the absence of their caregivers during the meeting restricted our ability to determine the veracity of the participants' statements, whose answers could have been impacted by social desirability bias. Additionally, participants' frequently missed appointments and missed phone calls affected the intensity and consistency of behavioral counseling we were able to offer.

Summary of Clinic-based Approach to Program Implementation

Our first approach was based on the current evidence and health care requirements as part of a primary care visit according to the Eighth Joint National Committee (JNC 8) Hypertension Algorithm Guidelines: lifestyle change education including healthy eating, moderate alcohol consumption and regular physical activity. Through the implementation of this project based on current practices, we learned that –just as the evidence demonstrated– the simple approach of

educating and motivating affected patients to eat less and increase their physical activity to lose weight in order to be healthy often fails over time –although subsequent enhanced preventive behaviors could be expected such as a decrease in sedentary lifestyle– due to incomplete education in the limited timeframe of the clinic visit, or due to a lack of sustained motivation. Furthermore, in groups of affected patients with good knowledge and attitude about exercise and healthy nutrition, only 23.6% in exercise and 24.1% in nutrition showed a good practice (Jafari et al., 2016). This last data explains how the prevalence of obesity in the United States was 39.8% and affected about 93.3 million Americans adults in 2015-2016 (CDC, 2018), and explains the failing of our intervention.

Synthesis of Additional Review of Evidence

Given the limits of the weight management program implementation in the clinic setting, which was based on conventional evidence-based practice, we further reviewed the evidence, directing the search this time on other existing pathways, potentially non-conventional, that could better benefit patient populations.

The results of numerous randomized control trials (RCTs), which were all significant, demonstrate that to successfully implement a hypertension control program based on weight management, health care providers ought to demonstrate their interest in the community and its members. In fact, Theodore Roosevelt said: “No one cares how much you know until they know how much you care”.

Conventionally, providers would wait for patients’ visits in order to instruct them to adhere to a weight loss program. A lesson learned while implementing this project is that some patients might have little interest in changing their lifestyle no matter how unhealthy this may be. Or may they be uncomfortable discussing weight management because it could cause some

patients to leave the office with some sense of powerlessness and disconnect, considering their past failed attempts to lose weight. To make things worse, evidence demonstrates that only 30% of primary care providers routinely recommend exercise as lifestyle therapy to their patients (Pescatello *et al.*, 2015). Instead, in these RCTs, providers displayed their concern for affected individuals by leaving the primary care office providers to go into the community in order to meet participants where they were, causing a sense of togetherness and trust, which in turn resulted in high participants retention into these programs.

Common points to success found in the review of RCTs include developing an evidence-based protocol that incorporates interventions addressing healthy eating, physical activity and sociocultural habits that would be directly applicable to diverse populations of adults with hypertension and obesity (Pescatello *et al.*, 2015). Prevalent evidence-based criteria to run an effective weight management protocol include: a structured program, health care provider-led, with trained healthy lifestyle coaches, sustained at least over a few months, community-centered, fostering partnership and collaboration among participants, leaders togetherness, to sustain on a comprehensive lifestyle change interventions focused on increased physical activity and the DASH diet meals adapted to participants' cultural backgrounds or preferences, and including counseling through motivational interviewing using SMART goals.

For instance, an RCT was done with 150 Americans affected with refractory hypertension. The participants were led into a medically supervised protocol over more than six months. After four months, they were able to observe a meaningful decrease in blood pressure, which was sustained for at least a year. They also experienced an improvement in biomarkers of cardiovascular diseases after four months. Also, lifestyle changes as we previously described were maintained for at least a year. The outcomes were patient-centered, and the participants

rated their quality of life as improved. The clinic experienced a decreased numbers of cardiovascular deaths, nonfatal myocardial infarctions, nonfatal cerebrovascular accidents or transient ischemic attacks (Blumenthal et al., 2015).

Another example is an RCT done with 161 Iranian women with uncontrolled BP. Through a medically-led protocol, the average blood pressure lowered from 158.8 (± 8.1) mmHg at baseline to 153.2 (± 6.4) mmHg after four weeks and to 145.5 (± 4.6) mmHg after six months. 42% of the variation in change in systolic blood pressure and 41% in diastolic blood pressure were explained by change in weight (Hasandokht et al., 2015).

A third example is an RCT done with 319 Black males affected with uncontrolled BP in barbershops. This RCT was a Pharmacist-led Protocol. Pharmacists worked in collaboration with primary care providers who helped them adjust antihypertensive medications according to the needs to of the participants. The barbers took participants' blood pressure measurements at the end of their haircut. Pharmacists came to the barbershops to obtain the blood pressure results and to adjust the medications. After six months, the mean systolic blood pressure in the intervention group decreased by 27 mmHg in the intervention group, while it decreased by 9.3 mmHg in the control group. Despite Blacks' low participation in clinical trials or adherence to medical care that remains a challenge due to their justified distrust in the medical community considering past historical healthcare inequities, at the end of this study the rate of cohort retention was 95% in the intervention group. Additionally, participants' self-rated health and patient engagement were greater in the intervention group (Victor et al., 2018).

Such comprehensive programs demonstrated greater efficacy than our current healthcare practices of simple lifestyle change instructions during office visits because they are implemented in the participants' natural environment. As a result, community-based programs

can potentially better translate healthcare guidelines meaningfully in subgroups populations' culture, in order to empower patients and foster their compliance. Such programs could positively impact the adherence to pharmacological measures of patients newly diagnosed with hypertension because of the increased trust that comes along with them. In fact, evidence shows that only 20% of patients diagnosed with hypertension demonstrate consistent adherence to their antihypertensive medication for the treatment to be effective during the first year of the diagnosis (Poluzzi *et al.*, 2005). Unfortunately, this experience revealed that such programs often lack availability in communities or are yet to be optimized.

Critical Appraisal of the Literature: Quality Assessment of Included Studies and Data Extraction

	Source and level of Evidence	Number of participants	Type of Device and Personnel	Primary Outcome Measure	Secondary Outcome Measures	Comments
1	Arena et al. (2015) Review of literature	N/A	Healthy Lifestyle Ambassadors designation Health Policy making	N/A	N/A	Created through collaboration of AHA/European Society of Cardiology / European Association of CV Prevention
2	Bauer (2014) Review of literature	N/A	-Rely on implementations by various sectors -Make public-private partnerships -CDC 4 cross-cutting strategies: (1)epidemiology/surveillance, (2)environmental approaches, (3)health system interventions, (4) community resources			Integrated approaches (strategies & interventions) to address risk factors and conditions Make population-wide changes Target population subgroups most affected

3	Blumenthal et al. (2015) RCT LOE: II	150	Center based lifestyle education (C-LIFE) or Standardized Education and Physician Advice (SEPA)	meaningful decrease in BP, improvement of biomarkers of CVD risks after 4 months	Determine whether lifestyle changes can be maintained for a year Enhanced QOL	C-LIFE: PA, reduced Na and calorie intake, DASH, weight management Purpose: determine Efficacy of C-LIFE in improving Resistant HTN (RH)
4	Cakir & Pinar(2006) RCT LOE: II	70	4 education classes and individual counseling sessions or routine outpatient services and usual lifestyle maintenance data gathering at baseline and after 6 months	Effects of a comprehensive Lifestyle intervention on BP and other CV risk factors in patients with hypertension. Significant reduction of anthropometrics, BP, and fasting lipids (except HDL)	Significant decreased cardiovascular risks	Feasibility of comprehensive lifestyle modification with non-pharmacologic interventions Public health priority Components: DASH, PA, Supportive measures (stress management, EtOH reduction, Smoking cessation)
5	Carlson et al. (2016)	40	Isometric resistance training	Significant reduction in BP		White Individuals between 36 and 65

	RCT LOE: II			and MAP		
6	Hasandokht et al.(2015) RCT LOE: II	161	Weight, BMI, Waist circumference, salt intake, PA level	Reduced Systolic BP	Other behavioral factors Significant correlation between BP and weight	Iranian women 35-65 yo Effectiveness of a multicomponent lifestyle intervention on high BP Addressed lifestyle factors (weight, Salt intake, PA) before, after 4 months, after 6 months
7	Jafari et al. (2016) RCT LOE:II	70	Measurements of BP, height, weight 6 education sessions and then weekly follow-up phone calls for 4 weeks	Improvement of Knowledge, Attitude and Practice	No significant patients' personal implementation of lifestyle modification and preventive behaviors enhancement	Patients affected with hypertension who underwent angioplasty Nurses use for patients' education Lack of motivation Families' participation

						Just knowledge and attitude are not enough for lifestyle modifications
8	Kapoor (2017) Review of literature	N/A	Review of evidence	Effective weight loss in midlife women	Weight regain prevention in midlife women	Programs specific to respondents Healthcare providers leading programs
9	Kim & Kim (2017) RCT LOE: II	71	Web-based autonomy supports for 12 weeks Or Individual consultations on healthy lifestyle	Amelioration of cardio-metabolic risks including waist circumference, BMI, systolic blood pressure, and visceral adiposity index	Increased intrinsic motivation, perceived competence, value/usefulness, interest/enjoyment effort/importance, and perceived choice	Postmenopausal Korean women Independent choice of strategies of diet, PA, and daily living
10	King et al. (2017) Observational	2990	Visits in primary care with MD/PA/NPs	Days (reported in months) from the start date to achieving HTN control: first of 3 consecutive	Decreased barriers to HTN control: Decreased behavioral risk	18-39yo 52% achieved HTN control within 24 mo The higher the

	I Study LOE: IV			normal BPs	factors: BMI Decreased comorbidities(CK D, DM, HLD) and morbidity burden	baseline HTN, the longer the encounter interval, the lower rate of achieving HTN control Young adults with shorter encounter intervals had lower antihypertensive medication initiation rates
11	Kunikullaya et al. (2016) RCT LOE: II	100	Music Intervention: Active music making or passive music listening 15min daily Lifestyle modifications per JNC VII guidelines: handouts given Weekly f/u by personal contact	24h ambulatory BP at the end of intervention Anthropometric measurements	Stress reduction: State Trait Anxiety Inventory (STAI) Biomarkers of HTN Correlation of biomarkers' levels with change in BP	30-60 yo participants, 50 per group participants with pre HTN or stage I HTN After 3 mo of music intervention, statistically more significant reduction in BP in group using music therapy in addition to LSC, than in group addressing LSC only.

12	La Verde et al. (2018) Observational study LOE: VI	2044	Impact of nutrients in diet Impact of specific food/food groups in diet Impact of dietary patterns	Adherence to Mediterranean diet	Arterial blood pressure measurement	Men and women 18yo and more
13	Mahdavi et al. (2017) cross-sectional study LOE: V	200	Exploratory factor analysis	Factor load measurement of perceived barriers to adherence to DASH diet	Compliance with DASH diet	Most common perceived barriers: social and environmental Others: Limited time due to family responsibilities Irregular work hours Eating outside / eating fast-food, low availability of healthy choices Food cooked by others
14	Margolis Et al. (2015)	450	Increased BP telemonitors use	Improved Systolic BP	Maintained high adherence to	Increased consistency in self-

	RCT LOE: II		Pharmacists' increased medication treatment intensification		medication	monitoring BP Pharmacy-led Improved medication adherence Decreased salt intake -No change in Lifestyle modification due to limited resources allocation to this priority in the context of this study
15	Persoskie (2014) Explorative study LOE: IV	504,408	Behavioral Risk Factor Surveillance System (BRFSS) Phone interviews (cellphone & landlines)	lower rates of health professionals' lifestyle modification counseling to smokers as compared to non-smokers	Successful replication of previous study showing similar results	Increased lifestyle Modification counseling needs for smokers Smoking related disparities in lifestyle modification counseling for hypertension Cause related to

						providers' views on smokers as less likely to comply with lifestyle changes
16	Pescatello et al. (2015) Literature Review LOE: V	11	Evaluation of current professional committees on exercise prescriptions guidelines Overview of Eighth Joint National Committee (JNC8) recommendation	Usefulness of existing scientific statements, and recommendations in the prevention, treatment and control of hypertension	Determination of future research priorities	
17	Schoenthaler Et al. (2015) RCT LOE: II	373	BP measurement Motivational interviewing on therapeutic lifestyle changes	BP reduction at 6 months	BP control at 9 months into the program	32 black churches Evaluation of the translation and Sustainability of efficacious interventions such as DASH, PREMIER, TONE to high-risks populations in community-based settings. Testing the effect of motivational

						interviewing on therapeutic lifestyle changes (MINT-TCC): physical activity, weight, fruits and vegetables intakes
18	Victor et al. (2018) RCT LOE: II	319	Barbershops BP measurements by barbers and or pharmacists during haircut appointments Doctorally-prepared pharmacist-led BP medications prescriptions and doses adjustments Pharmacist-led follow up phone calls	SBP Reduction	DBP Reduction Cohort retention	Participants: Black males, regular barbershop patrons Provider-led protocol Health promotion/health coaching/social support by barbers (community members of participants)
19	Kapoor (2017) Review of literature	N/A	Review of evidence	Effective weight loss in midlife women	Weight regain prevention in midlife women	Programs specific to respondents Healthcare providers leading programs
20	Wang et al. (2018)	8828 women	Genetic predisposition	Genetic association with weight gain	Improved diet quality on weight management	5 measurements repeated over 20

	Prospective Cohort Study	5218 Men	calculated Dietary patterns assessed	decreases with adherence to healthy diet patterns	especially in people at high genetic risk for obesity	years
21	Warner et al. (2013) RCT LOE: II	2631	Outsourcing calls to a call center Part time staff Incentives (taxi vouchers, night & weekend appointments, gift cards) Newsletters, social gatherings, building relationships	Retention of 86% at 24 months Weight measurement	Difficulty maintaining consistent space for follow up visits	Home visits Calling participants not from their primary health center

As a result, to improve the number of projected participants, since common risks of metabolic syndrome include cardiovascular risks, we reintroduced the project with an added discussion on the risks of pre-diabetes or diabetes which was one of the most common motivation to participate in the program because the associated disabling comorbidities. In conjunction with a health prevention foundation and association, we participated in community health events during which we shared information on the program to community members. Eligible individuals were invited to participate, knowing that the implementation would be the same for the NP-led Blood Pressure and Weight loss Program as for the Pre-Diabetes Program.

Community-based Project Method

An approval for this evidence-based project was obtained from the local ethical committee. Potential participants were then invited into the program, within the guidelines of the IRB approval. In previous similar evidence-based implementations and studies, partnership with churches was limited to the recruitment phase (Schoenthaler et al., 2015). We chose to keep the church leaders actively involved throughout the program by cultivating a sense of excitement and empowerment, to promote growth and expansion, especially in the faith-based counseling portion of the program to address maladaptive coping with stress adequately, in order to foster participants' trust and the program's sustainability. We chose to adapt our program considering the socioeconomic background of most participants as they come from various immigrant communities, having kept on with cultural habits from their countries of origins. We also considered community resources available in order to teach health education sessions in a culturally sensitive manner by choosing culturally competent speakers according to the World Health Organization recommendations (Hasandokht, et al., 2015).

Data including blood pressure, and anthropometric measurements (weight, height, and waist circumference) was collected during meetings with participants. As we discussed the impact of increased weight, hypertension and cardiovascular risks with participants, we led participants to set SMART goals. The diet recommended remained the DASH diet adapted to the participants' cultural meals (Hasandokht et al., 2015; Kim & Kim, 2017). We considered leaders of their communities to train as coaches that they would be able to bring the information in a culturally sensitive way to their communities.

Implementation of the Community- Based Project

As we launch this new version of our project, class sessions are set to include topics such as information on cardiovascular disease including risks, prevention and management at an appropriate health literacy level, practice in healthy cooking in a culturally meaningful way, and physical activity programs. Participants will be given opportunities to discuss barriers to implementing therapeutic lifestyle modifications and practicable solutions redesign their habits, including coping strategies shared during classes. Our goal is to gather groups of participants belonging to the same community to stimulate prompt compassionate peer support. Class sessions begin and end with a relaxation technique that was meaningful to the participants present such as mindful eating of a healthy snack, music listening, breathing exercises or prayer.

Moreover, effective stress-reducing elements such as music (Kunikullaya et al., 2016) will be promoted and offered. Stress will be addressed either in groups or in individualized faith-based counseling sessions.

Furthermore, evidence shows that short encounter intervals with health professionals help maintain positive results of hypertension control and sustain lifestyle modification implemented (King et al., 2017). We will thus continue to promote interactions in the community

instead of in the clinical setting. Weekly individualized follow-ups will be done alternatively over the phone or in person. In person follow-ups will allow the recording of blood pressure and anthropometric measurements.

Results

Since this project is currently being implemented, we consider the analysis of the results premature. Yet, participants are expected to be more motivated and to demonstrate a higher level of interest than participants from the first project implementation with the conventional standards of care, based on the consistent results found in the review of evidence. Also, some commented that their stress level decreased as compared to before starting this program, and their ability to sleep improved so much so that they feel rested in the morning. We will continue the work over the next year, to be able to obtain further objective data such as participants' blood pressure and anthropometric measurements, as well as further subjective outcomes as participants' comments on level of happiness and quality of life.

Discussion / Interpretation / Expected Outcomes

Effective Components to Lifestyle Modifications

Lifestyle modifications are standard recommendations in reducing or preventing cardiovascular risks. Also, the efficacy of lifestyle changes on lowering blood pressure is well documented. At least 75% of participants were either overweight or obese. It is common knowledge that habits are difficult to alter. Despite high levels of intrinsic motivation, participants slowly engaged in therapeutic lifestyle changes, as their habits were being renewed. In spite of considerable volume of literature regarding blood pressure control based on lifestyle changes including the benefits of regular physical activity, evidence showed that only about 30% of health care providers consistently implement lifestyle modification counseling (Pescatello *et*

al., 2015). Additionally, evidence shows that promoting awareness on lifestyle modifications increased patients' knowledge, however, these instructions did not significantly affect patients' attitude or alter their behavior into healthier life choices and daily habits as evidenced by the rate of individuals affected with increased weight in the United States (CDC, 2018).

Barriers to following Lifestyle Modifications

Some factors such as alcohol consumption, illicit drugs use, side effects of medications, or complexity of a heart healthy diet led to lack of motivation, despite social support (Jafari, 2017). These results demonstrate the need for structured programs to help patients affected with hypertension and cardiovascular risks embrace successfully their lifestyle modifications.

Another reason could be the limited availability of evidence on how lifestyle modifications accurately translate in various cultures' way of living to facilitate patients' autonomy and independent compliance to lifestyle changes in a country such as the United States of America, in which cultural diversity has become the norm. Accordingly, an autonomy-supportive lifestyle modification program was implemented for post-menopausal women in Korea over 12 weeks.

This program resulted in an amelioration of their cardio-metabolic risks including waist circumference, BMI, systolic blood pressure, and visceral adiposity index while also yielding to improved increased intrinsic motivation, perceived competence, value, usefulness, interest, enjoyment effort, importance, and perceived choice (Kim and Kim, 2017).

An additional reason to the lack of adherence to lifestyle changes lies in the difficulty to follow a DASH diet due to perceived social and environmental barriers, with some reasons found in a exploratory factor analysis including: limited time due to family responsibilities, irregular work hours leading to eat outside more often, low availability of healthy choices, food cooked by others, patients' dietary habits, cooking habits, or financial limitations.

Some participants mentioned that the social pressure of looking slim, young and healthy and the inner guilt or shame that comes with being overweight or obese in the American society brought a paralyzing sense of powerlessness that they were able to overcome and sign up to the program because of the enthusiasm of the program representative.

Another major barrier was for participants to follow the program protocol, which required committing to new habits, which they found difficult. Future studies could include ways to ease eligible participants more promptly into a culturally competent therapeutic lifestyle redesign. Future studies could also be focused on pathways to consistent provision of behavioral counseling. The question would become: in outpatients affected with hypertension or obesity would systematic, structured, and culturally sound behavioral counseling as part of healthcare delivery instead of current practices (lifestyle change education solely) increase patients' willingness to adhere to a lifestyle modification program?

Cost Benefit Analysis

Recruiting participants into a lifestyle change community program had minimal costs. In fact, none of the RCTs emphasized a financial burden, except the expected time investment. In the context of this project, the total expense of \$132 included a blood pressure cuff, a scale, and some water to welcome the participants.

Evidence demonstrates that medical costs of people who have obesity are evaluated at \$1,429 higher than those of normal weight. The estimated cost of obesity was evaluated at 147 billion USD in 2008 (CDC, 2018). Non-communicable diseases including hypertension and obesity have become such an important part of healthcare costs in the United States that the global cost that was estimated at \$6.3 trillion (USD) in 2010 is projected to increase to \$13 trillion (USD) by 2030 (Arena et al., 2015). Therefore continuing to raise awareness on the

importance of adequate weight management in a way that is specific to each sub population needs cannot be overemphasized.

Clinical Implications

Considering the persisting prevalence of uncontrolled hypertension and obesity in our communities and considering the strong evidence speaking to the value and efficacy of healthcare providers-led community programs to help individuals at risk or affected with hypertension and/or obesity, the need to multiply such comprehensive community programs remains tangible. Health care providers should therefore focus on increasing disease prevention, slowing disease progression, reducing complications improving quality of life, and reducing demands on the healthcare system more than ever before.

Equally, partnering with community resource centers in order to effectively understand potential participants' needs (Kapoor, 2017) to develop, sustain, and expand similar programs should remain a high priority. As such, professionals including healthcare providers and policy makers would be empowered to allocate resources to appropriate programs in an astute way (Pescatello et al, 2015), and refer individuals with needs to culturally-sound programs, that are tailored to the participants' unique needs, keeping in mind that lifestyle changes represent a lifelong journey that should not be kept back from patients (Kapoor, 2017).

Given the well-documented successes of healthcare provider-led blood pressure lowering programs found in evidence, health professionals should stand at a pivotal role in developing such programs, in collaboration with a multidisciplinary team for appropriate hypocaloric dietary plans and effective psychosocial support (Kapoor, 2017). We thus identify a possible need for increase in referrals to Dieticians and consider an auto-generated referral for all patients with ICD 10 diagnosis code for hypertension, so that the DASH diet to be effectively recommended to

all affected patients, with a focus on culturally-sensitive educational methodologies and nutrition emulating from the DASH diet to minorities.

Health Policy Implications

The National Health Promotion and Disease Prevention Objectives for 2030 (Healthy People 2030), in which healthcare professionals may have an input, is currently being developed. Obesity has a significant impact on most non-communicable chronic diseases including cardiovascular diseases: the main cause of death in the United States. As previously stated, the estimated cost of obesity is high. Obesity rates are highest in populations with low education or low income (Bauer, Goodman, & Bowman, 2014). One could argue that the root of the cause is the lack of access to healthy food due to affordability constraints.

Healthcare providers could therefore support health policies that prioritize initiatives focused on investments in health promotion & disease prevention (Bauer, Goodman, & Bowman, 2014), and promote access to nutritious food to all individuals, including low income population subgroups, who are the most affected by increased weight and cardiovascular diseases, by utilizing pricing strategies such as making full-service groceries and farmers' markets more accessible and more affordable while raising prices on high-calorie low-nutrition foods and beverages, or banning artificial trans fats from the food supply in order to ultimately improve quality of nutrition and quality of life by encouraging healthy behaviors & lifestyle.

Final Conclusion and Recommendations

In the control of hypertension and obesity, lifestyle modifications including healthy diet and regular physical activity, bring significant health improvements provided that the participants will adhere to a program focused on cardiovascular risk factors reduction that would foster a change of mindset and habits leading to participants' increased ability to be in control of their weight, and thus, their blood pressure. Based on the review of previous studies and on the recent though worthwhile results of implementation, we expect the future results of this evidence-based project to positively impact participants and their communities.

Thus, healthcare providers in primary care should routinely refer to health professional-led lifestyle modification comprehensive community programs patients who would benefit from them. Partnership and collaboration among healthcare providers would increase awareness of the existence of such programs within their patients' communities. The presence of known comprehensive structured lifestyle modification programs in the community would cause health care providers to direct their patients to such programs to reinforce the lifestyle change education given during the outpatient visit. Similarly, DNPs could develop and champion provider-led lifestyle change programs, collaborating with leaders in communities for sustainability & growth. This could be an opportunity for a DNP student to implement routine teaching surrounding the DASH diet and assessment of level of exercise in an effort to promote weight reduction and hypertension control.

A limitation to implementing this project was the need to motivate eligible individuals to become participants in the program or their retention in the program, leading to a minimal number of active participants obtained. Future studies could include ways to ease eligible individuals more promptly into a culturally competent therapeutic lifestyle redesign for healthier

communities. Future studies could also be focused on pathways to consistent provision of behavioral counseling. The question would become: in outpatients affected with hypertension or obesity would systematic structured behavioral counseling as part of healthcare delivery instead of current practices increase patients' willingness to adhere to a lifestyle modification program?

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