

ORIGINAL ARTICLES

Nursing students serve and learn how to check, change, and control blood pressure in the local community

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ABSTRACT

Background: High blood pressure is currently affecting 103 million people in the United States and is a major risk factor for cardiovascular disease, stroke, and heart failure. The American Heart Association (AHA) launched Check. Change. Control. Program (CCC program). The program is an evidence-based hypertension management program that utilizes blood pressure self-monitoring to empower patients/participants to take ownership of their cardiovascular health.

Project: Following the Partnership Model for Service Learning, Miami University and The AHA propose implementing the “Serve and Learn How to Check, Change, and Control: A Community-Based Intervention to Improve Blood Pressure Control” to improve the BP of a diverse group of residents in Middletown and Hamilton cities in Ohio.

Participants: Fifteen nursing students served as volunteer health mentors. Each nursing student recruited five community members over the age of 18 and checked their blood pressure two times every month for four months. 80 community members were recruited and joined the project for four months.

Results: At the end of the program, more than half of the participants (n = 41) had blood pressure improvement (decrease in systolic or/a diastolic). On third of Tier 1/ HYPERTENSION participants (n = 10) have moved from uncontrolled (> or = to 130/80) to controlled (< or = to 129/79) based on comparing the participants’ 1st blood pressure reading to their last.

Conclusions: The extremely positive effects of this project are an eye-opening on the need of applying the program on a larger scale. To apply this program on a larger scale, partnerships with community organizations such as community health and wellness centers are needed. These partnerships will provide quality access to healthcare. The students will be able to meet participants where they are in their communities in a safe, vibrant, open and welcoming centers.

Key Words: Hypertension, Nursing, Community health, American Heart Association, Service learning

1. BACKGROUND

Based on the latest blood pressure guideline released by the American Heart Association’s (AHA) nearly half (46%) of adult Americans have high blood pressure.^[1] High blood pressure is currently affecting 103 million people in the United States and is a major risk factor for cardiovascular disease, stroke, and heart failure.^[2] Cardiovascular diseases,

which includes coronary heart diseases, myocardial infarction, and heart failure, is the leading cause of death in Butler County, Ohio, and the nation. In Butler County according to the data 2011-2015, the mortality rate from heart disease was 166/100,000, and the Ohio state rate was 188.4/100,000. In addition, cerebrovascular disease death most frequently results from a stroke. According to 2015, ODH Ohio Public

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Health Data Warehouse, in Butler County, the mortality rate was 38.7/100,000 and in Ohio State, the mortality rate was 40/100,000. High blood pressure is the main factor associated with both Heart disease and cerebrovascular disease.^[3]

Community-based non-pharmacological and health education programs may be helpful in improving health outcomes in patients with chronic illnesses.^[4,5] Community-based interventions such as health education and counseling found to be effective when compared with alternatives such as wellness visits or primary care follow up. Also, they are cost-effective for certain health conditions, particularly when partnering with low-income, underserved, and racial and ethnic minority communities.^[4,5] Several studies evaluate the impact of the community-based interventions and health education programs in controlling high blood pressure.^[5-10] Yet many of these programs required significant resources, and their sustainability, and generalizability to other settings was unclear.

The American Heart Association AHA / American Stroke Association (ASA) mission is to build healthier lives free of cardiovascular disease and stroke.^[1] In supporting this mission, the AHA launched Check. Change. Control. Program (CCC program). The program is an evidence-based hypertension management program that utilizes blood pressure self-monitoring to empower patients/participants to take ownership of their cardiovascular health.^[11] The purpose of the CCC program is to control high blood pressure as a health disparity among Americans and to create a culture of health throughout the communities. CCC program will help in screening and controlling high blood pressure through enhancing blood pressure self-monitoring and empowering participants to take ownership of their cardiovascular health. The program launched as a pilot in August 2012 with a focus on top 18 markets nationwide. As of June 2017, the program has expanded to over 150 markets, 389,000+ participants enrolled with an average drop in systolic blood pressure of 11 mmHg. Controlling high blood pressure is considered an important factor in managing both Heart disease and cerebrovascular disease and in lowering the mortality rate.^[11]

Few studies evaluate the impact of AHA CCC program.^[12,13] The result of these studies showed that CCC as a simplified and cost-effective community-based hypertension intervention programs may lead to BP improvements. One study showed that CCC demonstrated significant BP reduction among 2,000 participants from eight Durham, NC outpatient clinics over a 6-month period.^[12] In another study 4,069 adults were enrolled into the CCC program at 18 US sites and the results showed that CCC program was associated with improved BP control (13.7 mmHg average reduction in

BP) in a diverse community-based population.^[14]

Check. Change. Control is designed to establish community partnerships and meaningful volunteer roles and is focused on innovation and sustainability. The most common program implementation sites were churches, healthcare institutions, community or recreation centers (including YMCAs), worksite wellness programs (e.g., insurance companies), other businesses (e.g., pharmacies, insurance companies), or other (e.g., private societies or organizations, apartment complexes). These sites trained volunteer health mentors to carry out CCC programs and interact with program participants; these volunteer health mentors were from both healthcare and nonhealthcare backgrounds.^[11,14]

The literature showed that community health promotion and disease prevention interventions conducted by nursing students have positive impact on the local communities.^[15,16] These interventions also can serve as an effective strategy for teaching nursing student competencies and facilitating engagement with the community.^[15,16] To engage nursing students in improving local community health outcomes, Miami University partnered with AHA to apply the CCC in the local community. The nursing students at Miami University served as volunteer health mentors and implemented the CCC program in the local community. Following the Partnership Model for Service Learning,^[17] Miami University and The AHA propose implementing the “Serve and Learn How to Check, Change, and Control: A Community-Based Intervention to Improve Blood Pressure Control” to improve the BP of a diverse group of residents in Middletown and Hamilton cities in Ohio.

2. THEORETICAL MODEL

The Partnership Model for Service-Learning will be utilized to guide the application of the proposed intervention “Serve and Learn How to Check, Change, and Control: A Community-Based Intervention to Improve Blood Pressure Control”. The Partnership Model provides a framework to ensure a cohesive plan for teaching, scholarship, and service.^[17] A committed “community partner”: American Heart Association and the “faculty”: Miami University serve as the center of the Partnership Model itself. On a parallel plane to the faculty and community partner, are the students. They are the “driving force” behind the work that is accomplished. The students served as volunteer health mentors and implemented the CCC program in the local community. They provided a constant free flow of service. Another essential component of the Partnership Model involves the target population: a diverse group of residents in Middletown and Hamilton cities in Ohio (see Figure 1).

The Partnership Model for Service-Learning was successful in guiding and implementing comparable projects.^[17] The results of comparable programs showed positive outcomes for faculty members, students, community partners and community members. The model helped the programs in planning and in setting expectations and responsibilities.^[17,18]



Figure 1. The partnership model for service-learning

3. PROJECT DESCRIPTION

This is the first time that the AHA CCC program was implemented by nursing students. Integrating the CCC program in the nursing curriculum will take the AHA CCC program to the next level where nursing students, who have the clinical knowledge and training, implement the blood pressure measurements and provide health education. In the Serve and Learn How to Check, Change, and Control: A Community-Based Intervention, the Nursing department at Miami University integrated the AHA CCC program in the nursing curriculum as a service learning program. The nursing students served as Volunteer Health Mentors. Each nursing student recruited five community members over the age of 18 and checked their blood pressure two times every month for four months. In addition, the students used the AHA CCC program education resources to provide health education about blood pressure. The students utilized the AHA CCC 4 Month HBP Educational Series and offered

one on one teaching sessions for the participants.^[19] The students communicated directly with participants (community members) facilitating their success in the program including successfully uploading blood pressure readings, using an online tracker and strengthening their commitment to the program.

Fifteen nursing students served as Volunteer Health Mentors. Each nursing student recruited five community members over the age of 18 and checked their blood pressure two times every month for four months. 80 community member were recruited and joined the project for four months. The nursing students recruited their family members, friends, or coworkers. To maximize the benefits for the community members, the students were encouraged to recruit community members who have hypertension.

4. RESULTS

From July 1, 2017 to June 30, 2018, a total of 80 participants were enrolled. Participants were stratified into 3 tiers according to their initial BP: Tier 1 / HYPERTENSION (a systolic reading ≥ 130.0 mmHg AND/OR a diastolic reading ≥ 80.0 mmHg) = 32 (40% of the Participants), tier 2 / ELEVATED (systolic reading between 120.0-129.0 mmHg AND a diastolic reading of less than 80.0 mmHg) = 12 (15% of the Participants) and tier 3 / NORMAL (a systolic reading < 120.0 mmHg AND a diastolic reading < 80.0 mmHg) (see Figure 2).

At the end of the program, more than half of the participants (n = 41) had blood pressure improvement (decrease in systolic or/a diastolic). On average, 9.8 mmHg decrease in systolic blood pressure and 7.9 mmHg decrease in diastolic blood pressure. On third of Tier 1/ HYPERTENSION participants (n = 10) have moved from uncontrolled ($>$ or $=$ to 130/80) to controlled ($<$ or $=$ to 129/79) based on comparing the participants' 1st blood pressure reading to their last (see Figure 3).

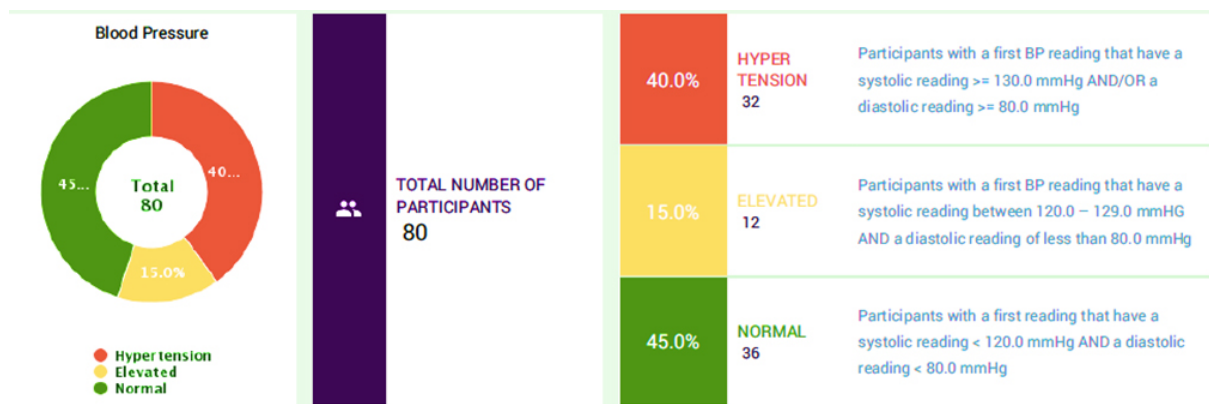


Figure 2. Blood pressure tiers

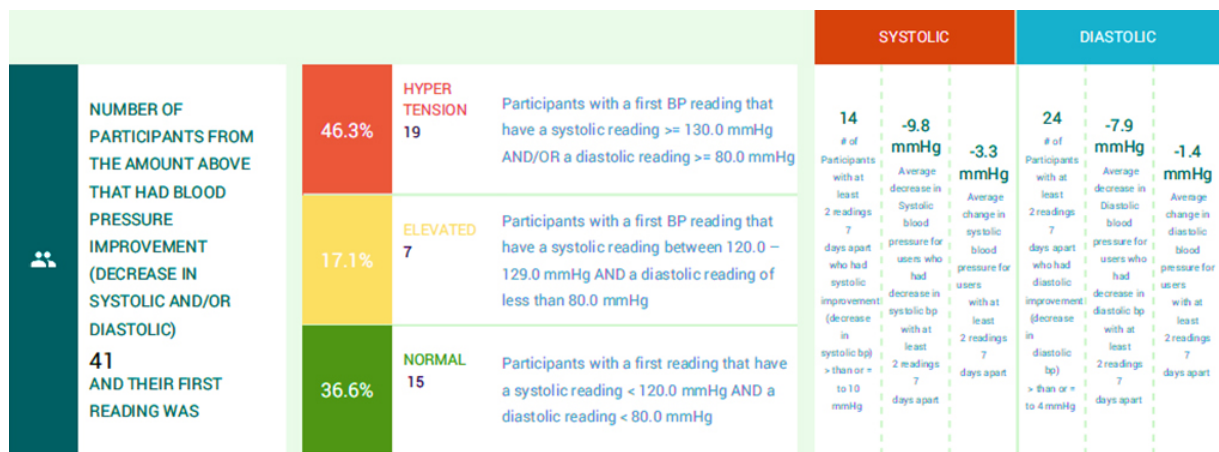


Figure 3. Changes in blood pressure readings

5. DISCUSSION

High blood pressure is currently affecting 103 million people in the United States. Hypertension or High blood pressure is a major modifiable risk factor for cardiovascular disease, stroke, and heart failure. Community-based programs that help in improving high blood pressure screening and self-care management are needed. Several prior studies have demonstrated that the use of screening, health education and self-monitoring can promote improved hypertension control.^[5, 7–10, 14]

In 2013, The AHA launched CCC program as an evidence-based hypertension management program that utilizes blood pressure self-monitoring to empower patients/participants to take ownership of their cardiovascular health. The CCC programs depends on volunteer health mentors to carry out the programs and interact with program participants; these volunteer health mentors were from both healthcare and non-healthcare backgrounds. This is the first time that the AHA CCC program was implemented by nursing students. Integrating the CCC program in the nursing curriculum will take the AHA CCC program to the next level where nursing students, who have the clinical knowledge and training, implement the blood pressure measurements and provide health education.

The result of this study showed the effectiveness of CCC program in improving the participants’ blood pressure and blood pressure self-monitoring. In addition, the program was

a great opportunity for the nursing students to practice clinical activities addressing community and population health. The positive results of this study support the findings of previous studies that investigated the CCC program.^[12, 13]

The extremely positive effects of this project are an eye-opening on the need of applying the program on a larger scale and invite other nursing programs in the region and US to participate in CCC program. To apply this program on a larger scale, partnerships with community organizations such as community health and wellness centers are needed. These partnerships will provide quality access to healthcare. The students will be able to meet participants where they are in their communities in a safe, vibrant, open and welcoming centers.

6. CONCLUSIONS

Implementing Check Change Control by nursing students was a novel community-based initiative that demonstrated reduction in BP among a sample from two local communities. Future efforts could focus on adopting this initiative by other nursing programs in the region to cover more underserved communities. We have learned that partnerships with other community organizations (such as YMCA) might enhance the participation in the CCC program and provide safe environment for both students and community members.

CONFLICTS OF INTEREST DISCLOSURE

The authors declare no conflicts of interest.

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