

## INTRODUCTION

Hypertension (HTN) is one of the most common chronic conditions in the USA, affecting about 1 in every 3 adults.

- Significant improvements in healthcare have been made related to HTN awareness and initiation of treatment, however, the rate of blood pressure (BP) control continues to remain suboptimal.
- 2017 ACC/ AHA practice guidelines recommend the use of the BP self- monitoring intervention to improve HTN and reduce the associated complications.
- Self- monitoring of BP (SMBP) is not routinely encouraged in clinical practice and is underutilized by adults with HTN.

## BACKGROUND/ SIGNIFICANCE

### Poor BP Control

- Approximately 51% of hypertensive adults do not have adequately controlled BPs
- Healthy People 2020 Goal #12: increase HTN control in all adults to 61.2%

### Complications of HTN

- Over time, poorly controlled HTN leads to target organ damage in the heart, brain and kidneys. HTN is the most common risk factor for stroke, heart attack and premature cardiovascular death.

### Financial Burden

- Estimated annual cost of direct and indirect expenses in 2013 was \$53.2 billion.
- Total direct costs are projected to increase to \$220.9 billion by 2035.

### Improving BP Control: SMBP

- Individuals are taught to utilize semiautomatic BP monitors to routinely measure and track their BPs in nonclinical settings.
- With an educational co-intervention SMBP has been associated with: (1) reduction in BP levels, (2) decrease in annual healthcare costs, (3) improvement in adherence to anti-hypertensive medications.
- SMBP is accurate and reproducible. More predictive of target organ damage and adverse cardiovascular events than office BP measurements.
- BP self- measurement enhances a patient's knowledge of their chronic condition, encourages them to become active participants in their own care, empowers them to make lifestyle changes, increases self- efficacy, and promotes autonomy.

## AIM

Improve BP control in hypertensive adults and ultimately reduce HTN-related complications.

## METHODOLOGY

### Design

- Quasi- experimental one-group pre-test post-test design

### Sample

- Convenience sample
- Members of a fitness facility between the ages of 18 to 89 years, who self-reported to have a pre-existing diagnosis of HTN and were currently taking antihypertensive medications

### Setting

- 83,000 square foot fitness community center located in East Rutherford, New Jersey

### Study Interventions

- Initiated on September 20, 2019 and consisted of 3 sessions conducted every 2 weeks

#### Session 1:

- Demographics questionnaire/ Medication adherence pre-test
- Pre- intervention BPs measured
- SMBP training; handouts and resources provided for adaption of the intervention

#### Session 2:

- First set of BP logs reviewed and collected from participants

- Additional support and education about SMBP

#### Session 3:

- Second set of BP logs reviewed and collected
- Medication adherence post-test
- Post- intervention BPs measured

### Measures

- Demographic data: 7 question survey
- Pre and post intervention mean systolic and diastolic BPs: Omron M6 BP monitor
- Pre and post intervention adherence to anti-hypertensive medications: 9 question Hill Bone Medication Adherence Scale (HB-MAS)

### Analysis

- IBM SPSS (Version 25.0)

**Descriptive statistics:** described the sample of participants

- Mean, frequencies, and percentiles

**Analytical statistics:** determined the efficacy of the SMBP intervention on BP control and medication adherence

- Wilcoxon signed- ranks test
- Confidence level 95%; Significance level 0.05

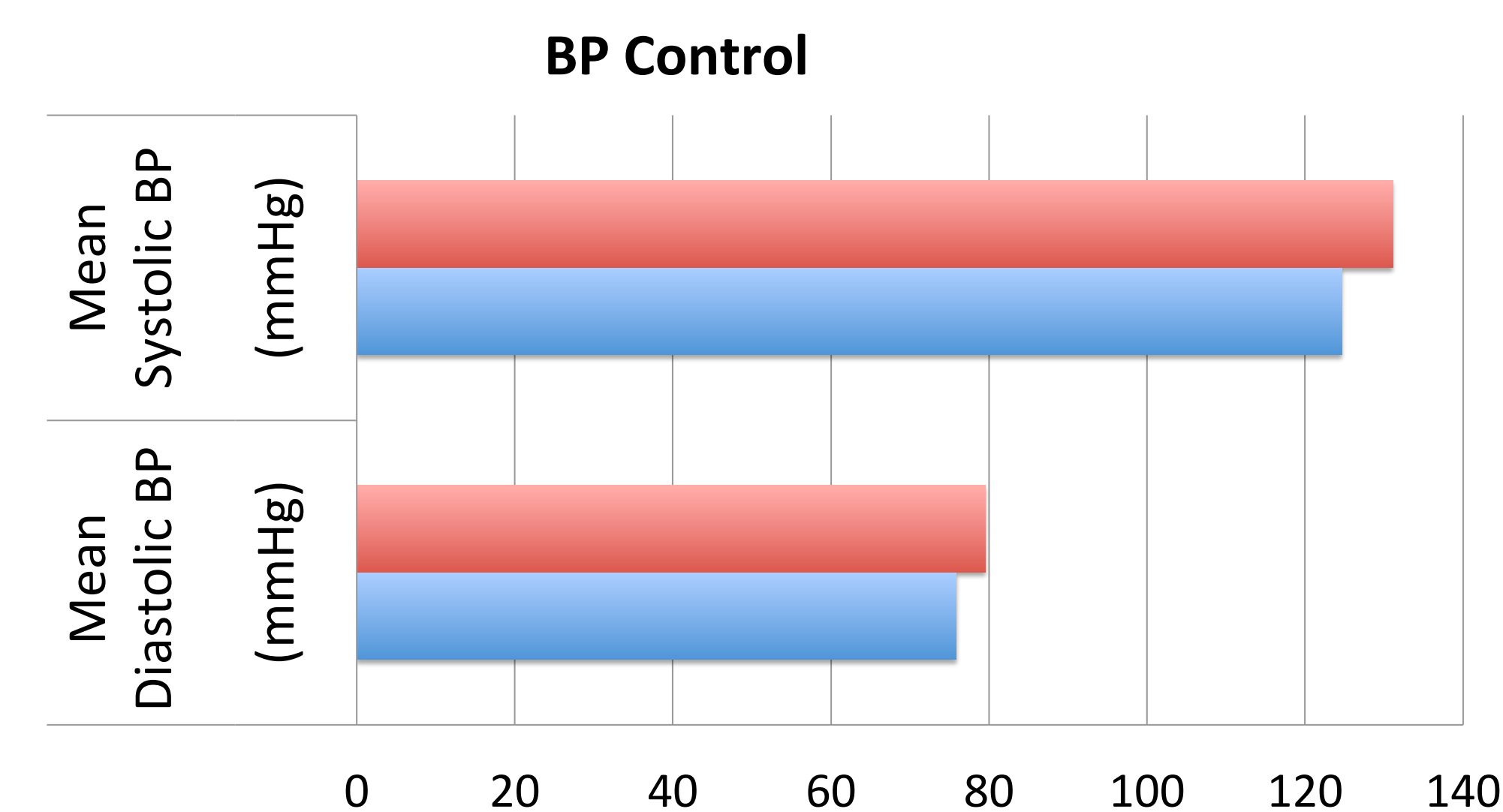
## RESULTS

A total of 13 individuals participated in this pilot project.

### Baseline Demographic Characteristics

- 53.8% (n=7) male and 46.2% (n=6) female
- 61.6% (n=8) of the participants were 55 and older; ages ranged from 35 to 74 years
- 61.5% (n=8) of the sample was white and 23.1% (n=3) was Hispanic/ Latino
- 69.3% of participants had been diagnosed with HTN for at least 5 years
- 23.1% (n=3) of participants reported to monitor their BPs daily, 30.8% (n=4) randomly checked their BPs, and 23.1% (n=3) did not monitor their BPs at all

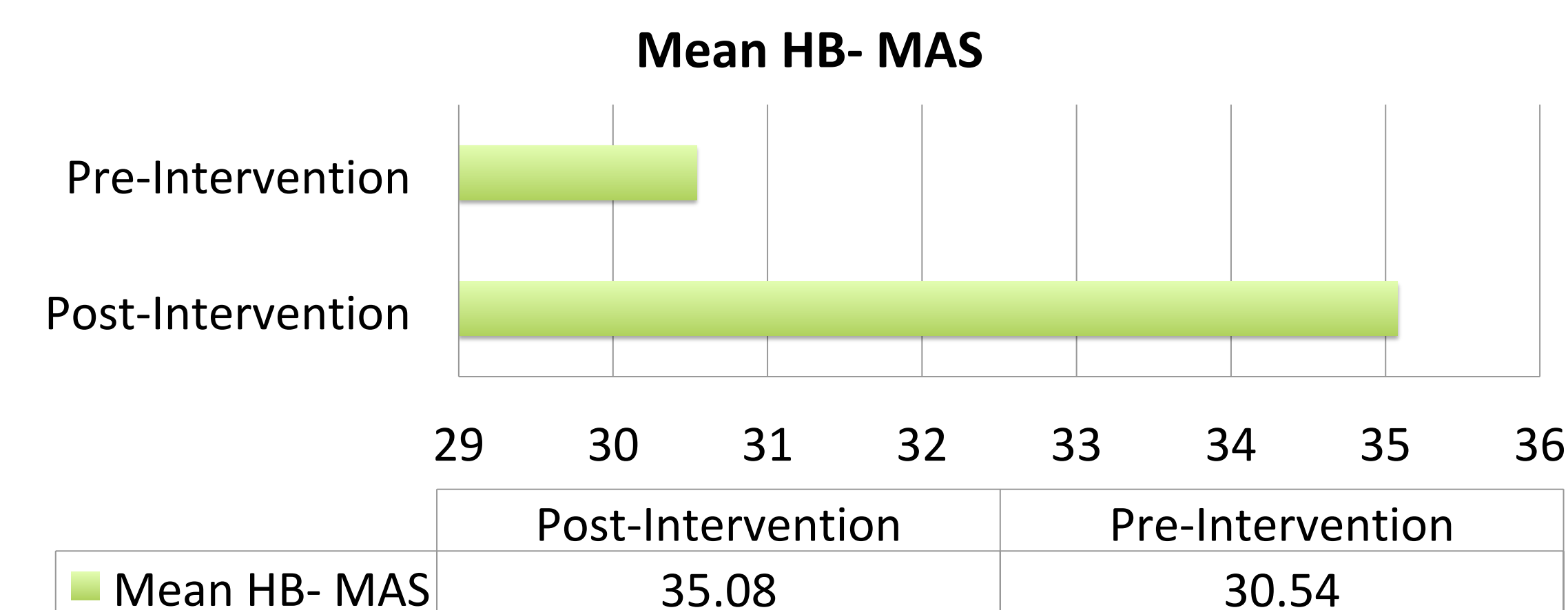
### Effect of SMBP on BP Control



	Mean Diastolic BP (mmHg)	Mean Systolic BP (mmHg)
Pre-Intervention	79.54	131.08
Post-Intervention	75.85	124.62

- The post-intervention reduction in mean systolic BP was **statistically significant** ( $p = 0.041$ , CI: 95%,  $Z = -2.047$ ).
- The post- intervention mean diastolic BP was numerically lower than the pre-intervention, however, the change was **not** statistically significant ( $p = 0.126$ , CI: 95%,  $Z = -1.531$ ).

### Effect of SMBP on Medication Adherence



- The difference between pre- and post- test mean scores was **statistically significant** ( $p = 0.002$ , CI: 95%,  $Z = 3.068$ ).

## DISCUSSION/ IMPLICATIONS

The SMBP intervention led to a statistically significant **reduction in systolic BPs** and to an **improvement in the adherence** to medications. The post-intervention decrease in mean diastolic BP by 3.69 mmHg could not be solely attributed to the effects of the intervention.

### Implications for Clinical Practice

- Introduce SMBP in all primary care offices and make it the cornerstone of HTN management
- Join Target: BP initiative
- Loaner BP machines

### Implications for Education

- Recommend all healthcare providers to participate in SMBP training/ information sessions

### Implications for Policy

- Recommend for all private and public insurance companies to cover the costs of automated BP monitors for patients with HTN
- Establish new CPT codes for SMBP counseling
- Support the development of free nationwide SMBP educational workshops and implementation training programs

### Implications for Economy

- Improved BP control will reduce the associated financial burden

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