**Mobile Health Interventions: A Synthesis of the Evidence for Future Implementation Among Black Hypertensive Populations**

Victoria Nguyen, School of Public Health

**MPH – Community Health Sciences**

<table>
<thead>
<tr>
<th><strong>Background</strong></th>
<th><strong>Results</strong></th>
<th><strong>Limitations</strong></th>
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</table>
| **Hypertension** (high blood pressure, HBP): a condition in which the measurement of blood pressures in one’s arteries is higher than normal (systolic <120 mm Hg, diastolic <80 mm Hg); the diagnosis of hypertension is defined as at or above 130/80 mm Hg) | First Author: Ju Young Kim  
Year Published: 2016  
Target Population: General Hypertensive  
Mobile Intervention’s Components: BP Measurement Reminders  
Primary Outcome: Positive change in health management activities  
Efficacy Results: Strengthened individuals’ management of blood pressure, though not generalizable to all populations  
Logic Model and Behavior Frameworks: Digital support coaching for self-management and healthy behaviors  | **•** Technological challenges prevalent throughout the mobile intervention  
**•** Troubleshooting to pair remote BP monitoring devices with smartphone applications: connectivity issues, software updates  
**•** Difficulty for older adults to navigate technological devices: simplifying application components may not be fully effective  
**•** Variable levels of health literacy and ability to engage with mobile intervention components  
**•** Alignment of patients’ preferences with clinical providers or health coaches (resource-intensive, cut clinical efficiency)  
**•** Limited application to complex health statuses  
**•** More hypertensive populations: not appropriate for people with extremely high BP and may need more immediate medical attention  
**•** Multiple comorbidities: must consider and accommodate other health concerns alongside hypertension |

**Introduction**

Almost half of adults in the United States have been diagnosed and/or are taking medication for hypertension. African Americans (AA) are especially affected with high prevalence rates of hypertension morbidity and mortality. Economic and social conditions play a large factor in their high prevalence rates and perpetuate the health disparity. Recommended self-care activities and modifications are only so feasible for certain populations as they encounter barriers that impact their affordability of health insurance coverage, access to clinical medications or therapies, and adoption of lifestyle changes. Mobile interventions may provide a mode for hypertension interventions for Black populations to overcome barriers to health management and to improve overall health outcomes, especially as mobile technology is generally widely used and can be adapted for a broad range of services.

**Objectives:**
- Synthesize evidence of mobile hypertension interventions
- Suggest effective practices for future hypertension programs with a special focus on Black populations.

**Methods**

The NCBI PubMed database was used to conduct a qualitative systematic literature search of free-to-access articles reporting mobile hypertension interventions conducted within the past five years (2015 to the present). The search was limited to articles published in the English language, excluding language-specific publications, and with a focus on hypertension management.

**Inclusion criteria:** primary publications from 2015 to the present. Interventions conducted in the United States, mobile app-based interventions for hypertension, English-language publications, and with a focus on hypertension management.

**Exclusion criteria:** secondary publications, interventions targeting youth or minors younger than 18 years old, and studies for outcomes that do not include hypertension.

**Data Extraction**

**Computerized Search Engine:** PubMed  
**Cutoff Date:** May 2020  
**Keywords:** hypertension, hypertension disparities, African American hypertension, mobile hypertension app, African American digital intervention, m-health hypertension

<table>
<thead>
<tr>
<th><strong>Program</strong></th>
<th><strong>Healthy Circles®</strong></th>
<th><strong>Smart Hypertension Control</strong></th>
<th><strong>DASH®</strong></th>
<th><strong>Medit SAFE-BP®</strong></th>
<th><strong>BPmed®</strong></th>
<th><strong>Faith11</strong></th>
<th><strong>SMASH12</strong></th>
<th><strong>Coachman13</strong></th>
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<tbody>
<tr>
<td><strong>First Author</strong></td>
<td>Ju Young Kim</td>
<td>Sharman Persell</td>
<td>Himali Weerasinghe</td>
<td>Kyle Morawski</td>
<td>Lorraine Buis</td>
<td>La Princess Brewer</td>
<td>Tattiana Davidson</td>
<td>Carolynn Still</td>
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<td><strong>Year Published</strong></td>
<td>2016</td>
<td>2020</td>
<td>2020</td>
<td>2018</td>
<td>2017</td>
<td>2015</td>
<td>2015</td>
<td>2020</td>
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<tr>
<td><strong>Setting</strong></td>
<td>San Diego, CA</td>
<td>Chicago, IL</td>
<td>Boston, MA</td>
<td>USA</td>
<td>Detroit and Southfield, MI</td>
<td>Rochester, MN</td>
<td>Charleston, SC</td>
<td>Cleveland, OH</td>
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<td>Positive change in health management activities</td>
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<td>Positive change in health management activities</td>
<td>Positive change in health management activities</td>
<td>Significant increase in medication adherence</td>
<td>Non-significant increase in medication adherence</td>
<td>Positive change in health management activities</td>
<td>Increase in medication management adherence</td>
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<td></td>
<td>Decrease in BP</td>
<td>Increase in self-efficacy</td>
<td>Limited differences between intervention and controls for BP change, yet potential for interventions in secondary outcomes that can improve hypertension management</td>
<td>Feasible and engaging, better empowered to identify differences in physiological responses to signify better hypertension management</td>
<td>Improvements in medication adherence for better hypertension management and outcomes</td>
<td>Text message reminders can improve medication adherence, which contribute to improved hypertension management</td>
<td>Cultural relevance and community base measured improvements in outcomes that show potential for hypertension management</td>
<td>Validated mobile intervention acceptability and usability to help manage hypertension</td>
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<td><strong>Efficacy Results</strong></td>
<td>Strengthened individuals’ management of blood pressure, though not generalizable to all populations</td>
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<td>Text message reminders can improve medication adherence, which contribute to improved hypertension management</td>
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<td>Clinically relevant metrics presented the potential for mobile interventions in hypertension management</td>
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**References**