A Longitudinal Assessment of Change in Blood Pressure Among Participants in the Heart Smarts Program

Kathryn Haskins 1, Suzanne Suarez2, Rickie Brawer, PhD, MPH3, Sandra Sherman, EdD4, Michelle Abel, MSPH5, James Plumb, MD, MPH6
1,2,3,6Thomas Jefferson University, 4,5The Food Trust

Background

• What is a food desert?
  - Low-income area in which people have limited access to fresh fruits and vegetables (FFV)
  - Lack of access to FFV is associated with numerous health issues including:
    - Cardiovascular disease
    - Obesity
    - Kidney disease
• How is the food access problem addressed?
  - Many programs focus on increasing amount of FFV in stores within low-income communities
  - Little evidence for positive impact on health markers (weight, blood pressure) or eating behaviors
• The Heart Smarts Program
  - Increases access to FFV in Philadelphia corner stores
  - Offers nutrition education classes
  - Offers health screenings, including blood pressure and weight/BMI measurements

Methods

• Participants
  - Self-selected members of Philadelphia communities whose local corner stores participate in the Heart Smarts Program
  - This study looks at participants who have had ≥2 blood pressure screenings
• Data Collection
  - Predetermined dates for participants to come to the store to have a health screening
  - Blood pressure and weight taken by researchers upon request by participant
• Groups
  - Based on length of time a participant has been with the program
    - 1 year or less
    - 2 years
    - 3 years
    - 4 or more years
• Analyses
  - Compare average change in blood pressure between groups to determine statistical significance
  - Analyze influence of demographic factors on change in blood pressure between and within groups

Results (continued)

• Overview of Participants
  - Total participants = 872
  - 50.6% women, 49.4% men
  - Age range = 18-93 years (mean = 48.4 years)
  - 71.2% White, 19.3% Hispanic, 3.8% Black, 1.6% Asian, 2.4% Other/Mixed Race
  - 36.0% use hypertension medication
  - 46.4% use tobacco
  - Participants could access the program through 15 corner stores

• Overview of Blood Pressure
  - No significant difference between change in systolic blood pressure between groups (p=0.625)
  - No significant difference between change in diastolic blood pressure between groups (p=0.259)

Table 1

<table>
<thead>
<tr>
<th></th>
<th>Mean Initial Systolic BP (mmHg)</th>
<th>Mean Initial Diastolic BP (mmHg)</th>
<th>Mean Recent Systolic BP (mmHg)</th>
<th>Mean Recent Diastolic BP (mmHg)</th>
<th>Mean Change in Systolic BP (mmHg)</th>
<th>Mean Change in Diastolic BP (mmHg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>128.68 (s.d. = 20.25)</td>
<td>84.00 (s.d. = 13.74)</td>
<td>129.31 (s.d. = 20.70)</td>
<td>83.25 (s.d. = 12.63)</td>
<td>0.63 (s.d. = 18.02)</td>
<td>0.75 (s.d. = 12.90)</td>
</tr>
<tr>
<td>Group 2</td>
<td>127.90 (s.d. = 19.45)</td>
<td>83.00 (s.d. = 12.83)</td>
<td>127.91 (s.d. = 19.49)</td>
<td>84.13 (s.d. = 13.04)</td>
<td>-2.01 (s.d. = 18.34)</td>
<td>1.11 (s.d. = 12.40)</td>
</tr>
<tr>
<td>Group 3</td>
<td>127.60 (s.d. = 20.94)</td>
<td>83.18 (s.d. = 12.78)</td>
<td>127.91 (s.d. = 19.96)</td>
<td>83.01 (s.d. = 12.25)</td>
<td>-1.48 (s.d. = 18.94)</td>
<td>0.17 (s.d. = 12.93)</td>
</tr>
<tr>
<td>Group 4</td>
<td>133.84 (s.d. = 20.69)</td>
<td>84.11 (s.d. = 13.86)</td>
<td>136.25 (s.d. = 12.43)</td>
<td>84.11 (s.d. = 12.32)</td>
<td>-3.25 (s.d. = 13.03)</td>
<td>-0.09 (s.d. = 13.54)</td>
</tr>
</tbody>
</table>

Summary of mean initial, recent, and change in blood pressures for each study group

Inquiry Question & Hypothesis

• Goal: determine if there’s a significant difference in magnitude of change in blood pressure among participants who have taken part in the Heart Smarts Program for differing lengths of time
  - Significant change in blood pressure = +/- 2 mmHg
• Hypothesis: participants who have been taking part in the Heart Smarts Program for longer periods of time will have a larger decrease in blood pressure from their initial blood pressure screening

• Additional Areas of Inquiry:
  - Impact of demographic factors on change in blood pressure between and within longitudinal groups
  - Sex
  - Race/ethnicity
  - Age
  - Hypertension medication use
  - Tobacco use
  - Heart Smarts Program site

Conclusions

• Length of participation in Heart Smarts program does not significantly impact magnitude of change in blood pressure
  - Reject hypothesis
• Little impact of demographic factors between or within groups
• No significant interaction of demographic factors with length of time in program and change in blood pressure
• Blood pressure is only one piece of the Heart Smarts Program
  - No assessment of changes in weight/BMI, eating habits, exercise, nutrition education, etc.
  - Cannot assess Heart Smarts Program as a whole based on this study

References