Diet and Exercise Interventions in the rural Deep South

Monica L. Baskin, PhD
Professor, Division of Preventive Medicine
University of Alabama at Birmingham (UAB)

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• Presentation contents are solely the responsibility of the presenter and do not necessarily represent the official views of NCI or the National Institutes of Health (NIH).

• No financial conflicts.
Objectives

- Describe the differential burden of cancer and associated risk factors by race/ethnicity and geographic region
- Review the study design, initial outcomes and potential impact of two interventions cancer prevention weight loss trials in the rural Deep South
- Discuss opportunities for diet and exercise interventions in rural communities
Death Rates* for United States, 2008-2012
All Cancer Types Combined

Data Sources: National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention, 2015
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*per 100,000 age adjusted to the 2000 US standard population
Cancer and Rural United States

- Residents of rural areas may experience higher risk of cancer
  - Limited healthcare facilities and other resources
  - Limited transportation
  - Lower incomes
  - More time working
  - Focus more on treatment than prevention
  - Higher rates of obesity and tobacco use

Health Behaviors

• A healthy diet can help sustain a healthy weight and lower risk of cancers

• Regular physical activity protects against the buildup of excess body fat and against cancer, independently

• Overweight and obesity contribute to an estimated 20% of all cancer-related deaths

Prevalence of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2014

† Prevalence estimates reflect BRFSS methodological changes started in 2011. These estimates should not be compared to prevalence estimates before 2011.

Sources: http://www.cdc.gov/obesity/data/adult.html
Challenges to Healthy Eating

- Larger portion sizes served at family meals.
- Southern dietary pattern (added fats, fried foods, eggs, organ and processed meats, sugar-sweetened beverages) associated with increased risk of chronic disease.
- Limited access to healthy affordable foods: smaller grocers/convenience stores.

Shikany, JM et al., Southern dietary pattern is associated with hazard of acute coronary heart disease......Circulation; 132(9): 804-14
Challenges to Active Living

• Limited Access/Availability of Services
  • Fewer parks, recreational facilities, etc. and/or greater distances to get to them

• Built Environment
  • Limited connectivity and sidewalks
  • Highways
  • Infrastructure and weather


Deep South Network for Cancer Control

• Unique 16-year collaboration between academic researchers, health professionals and specialists, local leaders, and community volunteers from Alabama and Mississippi to eliminate cancer health disparities by conducting community based participatory education, training and research.
  - Cancer outreach and screening
  - Promotion of healthy behaviors
  - Weight management
  - Training

2000-2016
Edward Partridge, MD – Principal Investigator
Claudia Hardy, MPA – Program Director

U01CA086128, U01CA114619, and U54CA153719
Community Health Advisors as Research Partners (CHARPs)

- Individuals who are indigenous to the community and agree to be a link between community members and the service delivery system


Community-Led Interventions

U54CA153719
2010-2016

R01CA160313
2012-2017

• Embedded in a long-term academic-community partnership focused on eliminating cancer disparities in the Deep South

• 2-year behavioral weight loss program adapted from evidence-based behavioral trials\textsuperscript{1,2,3} and delivered by trained local staff and volunteers.

• Community strategies selected from evidence-based models\textsuperscript{4} and delivered by local government or community-based organizations.

\textsuperscript{1} Wadden et al., \textit{Obes Res}. 2004; 12(Suppl 3): 151S-62S;
\textsuperscript{2} Svetkey et al., \textit{Ann Epidemiol}. 2003; 13(6):462-71.
Community Strategies

• Awarded “mini-grants”

➢ Expansion of Farmer’s Market and Community Garden, Incentives for Farmer’s Market Purchases, Park Improvements, Indoor Walking Trail

<table>
<thead>
<tr>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
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<tbody>
<tr>
<td>(6 months)</td>
<td>(6 months)</td>
<td>(12 months)</td>
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<tr>
<td>• 20 weekly face-to-face group sessions</td>
<td>• Face-to-face group sessions twice a month for 3 months, then once a month for 3 months</td>
<td>• Monthly motivational phone calls</td>
</tr>
<tr>
<td>• Led by regional and local coordinators with help by community-health advisors (CHARPs)</td>
<td>• Led by local coordinator with help by CHARPs</td>
<td>• Led by CHARPs</td>
</tr>
<tr>
<td>• Goal: 5-10% weight loss 1. Attending sessions 2. Keeping track of food and physical activity 3. Sticking to suggested calories per day 4. Eating 5 or more fruits and vegetables a day 5. Getting at least 150 minutes of physical activity a week</td>
<td>• Goal: maintaining weight loss or reaching initial 5-10% weight loss 1. Reviewing key Phase I sessions 2. Social support 3. Problem solving</td>
<td>• Local coordinator provides CHARP supervision and support</td>
</tr>
</tbody>
</table>
# Session Topics

<table>
<thead>
<tr>
<th>Session</th>
<th>Topic(s)</th>
<th>Session</th>
<th>Topic(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction, Self-Monitoring, Counting Calories</td>
<td>11</td>
<td>Time Management</td>
</tr>
<tr>
<td>2</td>
<td>What is Moderate Physical Activity?</td>
<td>12</td>
<td>Negative Self-Talk</td>
</tr>
<tr>
<td>3</td>
<td>Portion Sizes and Setting SMART Short-Term Goals</td>
<td>13</td>
<td>Dining Out, Finding Community Resources</td>
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<tr>
<td>4</td>
<td>Finding Time for Exercise</td>
<td>14</td>
<td>Cravings and Triggers</td>
</tr>
<tr>
<td>5</td>
<td>Planning Ahead, Breakfast</td>
<td>15</td>
<td>Checking Progress</td>
</tr>
<tr>
<td>6</td>
<td>Food Purchasing</td>
<td>16</td>
<td>Planning for Support</td>
</tr>
<tr>
<td>7</td>
<td>Food Preparation</td>
<td>17</td>
<td>Handling Special Occasions</td>
</tr>
<tr>
<td>8</td>
<td>Snacking and Conscious Eating</td>
<td>18</td>
<td>Maintaining a Healthy Weight</td>
</tr>
<tr>
<td>9</td>
<td>Family Support</td>
<td>19</td>
<td>Exercising to Keep Weight Off</td>
</tr>
<tr>
<td>10</td>
<td>Stress Management</td>
<td>20</td>
<td>Celebrating Accomplishments</td>
</tr>
</tbody>
</table>
Instructor’s Manual

GROUP SESSION 5

Planning Ahead and Readiness for Change

Key Skills
Planning for healthy behavior
Changing environments to promote success
Self-assessment of readiness to change

Participant Objectives
Participants will be able to:
1. Keep records of what they eat and how much they exercise.
2. Check progress on short-term goals and adjust plans as needed.
3. Review Food and Fitness Diary for meal patterns and adjust as needed.
4. Understand where they are with readiness to change behaviors to increase physical activity.

Goals of the Session
• Increase participants awareness of the importance of planning ahead in achieving goals.
• Increase acceptance of breakfast as an important meal of the day.
• Introduce the idea of learning to understand people's readiness to change behaviors.

Traveler's Gear Checklist
✓ Manage Your Meals handout
✓ Participants Food and Fitness Diary
✓ Building a Better Breakfast worksheet
✓ Better Breakfast Choices handout
✓ Quick and Easy Breakfast snacks handout
✓ How Ready Are I Change This Behavior? worksheet

GROUP SESSION 5

Planning Ahead and Readiness for Change

Participant’s Travel Guide

Goals for this Session:
3. Post your personal results on the refrigerator or another visible place.
4. Observe lifestyle for behaviors that may be hard to maintain and create rules and a plan to prevent weight gain.

Where Have You Been?
- Weight
- Sign-in
- Check-in

Heading Down the Road
- Planning ahead for meals
- Importance of breakfast
- Breakfast patterns

Pit Stop
- Taste it activity

Drinking Along
- Cutting the fat
- Stages of change and physical activity

Where Are We Going?
- Plan for the week
- Tracking (self-monitoring)
- Check-in/What to expect next week

Journey to Better Health

Progress Report

Your Starting Weight: 265 lbs
Your 5% Weight Loss Goal: 250 lbs
Your 10% Weight Loss Goal: 239 lbs

Weight Loss Progress

Comments
You have made it half-way through the program. Your progress report shows that you may be having some difficulties losing weight. Please don’t give up. Make sure that you attend the weekly sessions. Take time to review the weight loss suggestions in your booklet. Remember to use your diary to keep track of all the calories you eat and the exercise that you do every day. Keep your daily calorie intake of 1500 below the calorie recommendation you received at the beginning of the program. Also, make sure that you exercise at least 30 minutes a day, 5 days a week. If you need help, please contact your local coordinator. May. We can help you achieve your weight loss goals while you are on your Journey to Better Health.

Journey Miles Incentives

Journey Miles can be earned by completing the following activities each week (up to 5 points each session):
1. Complete 5 or more daily entries for a single week
2. Eat 5 or more fruits and vegetables on most days of the week
3. Complete a total of 150 minutes of physical activity during the week
4. Eat no more than your target calories on most days of the week
5. Attend the weekly J2BH session

You can earn your Journey Miles and cash them in for your choice of the incentives listed below.

Incentives for 25 Journey Miles
Measuring Cups

Incentives for 50 Journey Miles
Kitchen Scales

Incentives for 75 Journey Miles
Lunch Bag
Eligibility

• Local staff and CHARPs identified potentially-eligible participants

• Research staff further screened by phone with eligibility confirmed at baseline assessment
  ✓ Live, work, attend school in participating community
  ✓ Age:
    • JTBH: 30-70 years
    • DSN CARES cancer survivor: > 30 years
    • DSN CARES family member: > 19 years
  ✓ BMI: >25 kg/m²
  ✓ Controlled Blood Pressure (SBP<160 mmHg or DBP<100 mmHg)
  ✓ Controlled Glucose (<126); non-insulin dependent
  ✓ No prior weight loss surgery, eating disorder, recent cardiac event, mobility impairment
  ✓ Not currently smoking
<table>
<thead>
<tr>
<th></th>
<th>JTBH (N=409)</th>
<th>DSN CARES Cancer Survivors (N=141)</th>
<th>DSN CARES Family Members (N=128)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years), Mean (SD)</strong></td>
<td>46.5 (9.9)</td>
<td>60.1 (10.2)</td>
<td>52.8 (13.8)</td>
</tr>
<tr>
<td><strong>Income, N (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $10,000</td>
<td>81 (19.8)</td>
<td>32 (22.7)</td>
<td>22 (17.2)</td>
</tr>
<tr>
<td>$10,000-$30,000</td>
<td>175 (42.7)</td>
<td>55 (39.0)</td>
<td>49 (38.3)</td>
</tr>
<tr>
<td>$30,000-$50,000</td>
<td>95 (23.2)</td>
<td>20 (14.1)</td>
<td>24 (18.8)</td>
</tr>
<tr>
<td>Over $50,000</td>
<td>39 (9.5)</td>
<td>22 (15.6)</td>
<td>19 (14.8)</td>
</tr>
<tr>
<td><strong>Education, N (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than HS</td>
<td>23 (5.6)</td>
<td>14 (9.9)</td>
<td>9 (7.0)</td>
</tr>
<tr>
<td>HS grad/GED</td>
<td>141 (34.5)</td>
<td>55 (39.0)</td>
<td>50 (39.1)</td>
</tr>
<tr>
<td>Some post HS</td>
<td>74 (18.1)</td>
<td>16 (11.4)</td>
<td>18 (14.1)</td>
</tr>
<tr>
<td>College grad or higher</td>
<td>163 (39.9)</td>
<td>54 (38.3)</td>
<td>51 (39.8)</td>
</tr>
<tr>
<td><strong>Marital Status, N (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married/Living with Partner</td>
<td>181 (44.2)</td>
<td>70 (49.6)</td>
<td>56 (43.8)</td>
</tr>
<tr>
<td>Single/Not Living with Partner*</td>
<td>224 (54.7)</td>
<td>71 (50.4)</td>
<td>72 (56.3)</td>
</tr>
</tbody>
</table>

*Includes separated, divorced, widowed
Target Enrollment and Retention

• The JTBH trial (completed) enrolled 409 overweight or obese African American women from eight rural counties part of the Deep South Network. High retention was noted at 6-, 12- and 24-months (99.5%, 98.5%, and 75%, respectively).

• The DSN CARES study (ongoing) has enrolled 269 cancer survivors and family members. With average retention of 98% among counties reaching the 6-month follow-up period.
6-Month Weight Loss

- Average **Wt Loss Plus** participant experienced a weight loss of 3.2kg (p<.001) vs. 2.2kg (p<.001) for **Wt Loss Only**.

- **Across groups**, 4 out of 10 (43%) women enrolled in JTBH lost at least a 3% of their baseline weight.

- **Across groups**, more than 1 in 4 (27.1%) lost at least 5% of their baseline weight.

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Ard, JD et al., Weight loss and improved metabolic outcomes among rural African American women in the Deep South: Six-month outcomes from a community-based randomized trial (under review).
### Other 6-Month Outcomes

#### Participant Outcomes

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Baseline</th>
<th>Follow up</th>
<th>Change</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Waist Circumference (cm)</strong></td>
<td>110.6 (16.6)</td>
<td>108.0 (15.5)</td>
<td>-2.7 (8.4)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>SBP (mm HG)</strong></td>
<td>125.2 (16.6)</td>
<td>121.4 (17.2)</td>
<td>-3.8 (14.3)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>DBP (mm HG)</strong></td>
<td>79.7 (9.7)</td>
<td>76.9 (10.6)</td>
<td>-2.9 (9.6)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Fasting Glucose (mg/dL)</strong></td>
<td>94.0 (12.0)</td>
<td>93.9 (15.8)</td>
<td>-0.1 (14.6)</td>
<td>0.909</td>
</tr>
<tr>
<td><strong>Total Cholesterol (mg/dL)</strong></td>
<td>179.1 (35.6)</td>
<td>176.6 (34.5)</td>
<td>-2.6 (20.5)</td>
<td>0.019</td>
</tr>
<tr>
<td><strong>Triglycerides (mg/dL)</strong></td>
<td>124.5 (93.2)</td>
<td>103.4 (65.1)</td>
<td>-21.1 (91.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>HDL-C</strong></td>
<td>51.9 (14.4)</td>
<td>52.0 (13.9)</td>
<td>0.1 (9.5)</td>
<td>0.807</td>
</tr>
<tr>
<td><strong>LDL-C</strong></td>
<td>106.1 (33.2)</td>
<td>106.7 (31.2)</td>
<td>0.5 (22.3)</td>
<td>0.690</td>
</tr>
<tr>
<td><strong>Total cholesterol/HDL-C Ratio</strong></td>
<td>3.7 (1.1)</td>
<td>3.6 (1.1)</td>
<td>-0.1 (0.7)</td>
<td>0.122</td>
</tr>
</tbody>
</table>

Ard, JD et al., Weight loss and improved metabolic outcomes among rural African American women in the Deep South: Six-month outcomes from a community-based randomized trial (under review).
6-Month Weight Loss, Cancer Survivors*

• Average **Wt Loss Plus** participant experienced a weight loss of 2.2kg (p<.001) vs. 1.5kg (p=.0004) for **Wt Loss Only** and 1.4kg (p=.02) for **Control**.

• **Across intervention groups**, nearly 1 in 3 (30.4%) survivors lost at least a 3% of their baseline weight.

• **Across intervention groups**, nearly 1 in 4 (18.6%) lost at least 5% of their baseline weight.

*preliminary analysis, unpublished*
6-Month Weight Loss, Family Members*

- **Average** \textit{Wt Loss Plus} participant experienced a weight loss of 1.7kg (p<.0003) vs. 1.1kg (p=.02) for **Wt Loss Only** and 0.8kg (p>.07) for **Control**.

- **Across intervention groups**, 1 in 4 (26.7%) survivors lost at least a 3% of their baseline weight.

- **Across intervention groups**, nearly 1 in 8 (12.4%) lost at least 5% of their baseline weight.

*preliminary analysis, unpublished*
Primary Successes

1. Community-Base Participatory Research (CBPR) methods associated with significant reach and retention of a traditionally “hard-to-reach” target population

2. Findings suggest improvements in health outcomes (weight, waist circumference, blood pressure, triglycerides) that may be clinically meaningful

3. Trained lay health staff and volunteers delivered a translation of a high intensity behavioral intervention, resulting in findings that rival major efficacy clinical trials

Ard, JD et al., Weight loss and improved metabolic outcomes among rural African American women in the Deep South: Six-month outcomes from a community-based randomized trial (under review).
Effectiveness of Diabetes Prevention Program translations among African Americans

C. D. Samuel-Hodge¹,², C. M. Johnson¹,², D. F. Braxton¹,² and M. Lackey³

<table>
<thead>
<tr>
<th>Table 4</th>
<th>Summary of key characteristics and outcomes (all DPP studies)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristics</td>
<td>DPP</td>
</tr>
<tr>
<td>Total AA subgroup</td>
<td>508</td>
</tr>
<tr>
<td>Total AA in treatment group</td>
<td>204 in lifestyle group</td>
</tr>
<tr>
<td>Age, mean</td>
<td>50.6 years (total, lifestyle arm)</td>
</tr>
<tr>
<td>Gender, mean, % women</td>
<td>63%</td>
</tr>
<tr>
<td>Attendance, mean, %</td>
<td>95% (overall, individual)</td>
</tr>
<tr>
<td>Attrition, mean, %</td>
<td>7% (at 6 months, overall)</td>
</tr>
<tr>
<td>Intervention dose†</td>
<td>8-16 h (16 core sessions)</td>
</tr>
<tr>
<td>Short-term weight loss (immediate post-intervention, AA only)</td>
<td>AA (total): -5.8 kg</td>
</tr>
<tr>
<td>Weight loss rate † mean kg per month (AA only)</td>
<td>AA (total): -1.0 kg per month</td>
</tr>
</tbody>
</table>

*Calculated number of AA in overall study based on reported percentages, when the number of AA was not reported.
*Estimated intervention dose (h) was calculated for this review using the following formula: dose = (number of contacts) x (contact duration). Only the contacts from the weight loss phase were used to calculate dose.
*Weight loss rate was calculated for this review using the following formula: rate = weight loss/intervention duration. Weight loss was immediate post-intervention, before any maintenance phase contact. Intervention duration included the weight loss intervention only.
AA, African American; DPP, Diabetes Prevention Program.
The Usual Suspects

- Intervention Fidelity
- Intervention Dose
- Participant Adherence
Food for Thought

• Recruitment of cancer survivors was far more challenging than expected.
  ➢ Tailored outreach to survivors and community members is still needed to reduce stigma.

• Co-morbid conditions (e.g., uncontrolled hypertension, insulin-dependent diabetes) limited recruitment pool.
  ➢ Increased research with populations with multiple morbidity is a must. Different study designs, expanded outcomes, and clear reporting of participant characteristics in publications is needed.
Food for Thought

• Implementation staff risk behaviors often mirrored participants.
  ➢ *There may be benefit to having interventionists complete the program in advance of facilitation.*

• Participants were deeply disappointed in the reduction from weekly to bi-monthly, then monthly sessions.
  ➢ *Future interventions should explore alternative methods for continued engagement.*
Managing CBPR

**FIGURE 1.** Community involvement and power research continuum.


**Shifting Community-Based Participatory Infrastructure from Education/Outreach to Research: Challenges and Solutions**

Edward E. Partridge, Claudia M. Hardy, Monica L. Baskin, Mona Fouad, Lillie Willis, Garrett James, Theresa Wynn

Progress in Community Health Partnerships: Research, Education, and Action, Volume 9, Special Issue 2015, pp. 33-39 (Article)
What We Don’t Know

• Limited research targeting cancer prevention interventions in rural communities.

• Long-term impacts, sustainability, and cost-effectiveness not clear.

• What are the key factors to support programs with limited traditional resources (e.g., health promoting diet and physical activity environments, access to primary care, cancer centers, etc.)?
Acknowledgements

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THANK YOU!!

mbaskin@uab.edu