Family Influence on Fruit and Vegetable Consumption Among Rural, Low-Income, Preschool Children: A Preliminary Investigation of Factors Associated with Obesity
Research Team

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Funded by the
University of Maryland Cooperative Extension
& the Agricultural Experiment Station

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Project Focus

Influence of Grandmothers

- Understand the contexts in which low-income mothers and their children live, especially their family, neighborhoods, community, and geographic location, and the influence of those systems on food decision-making and childhood obesity.
Project Background

Grew out of three University of Maryland studies:

1. *Rural Families Speak* -- multi-state, longitudinal study through the USDA

2. *Sisters Helping Sisters* -- Partnership with Washington County Hospital System to reduce overweight associated with diabetes among African-American young women

3. *Nutrition Environment Measures Survey* (NEMS) Project -- Explored the relationship between neighborhood and community factors that could affect food insecurity within households as a factor associated with obesity
Project Aims

- Test the appropriateness, cost-effectiveness, and efficiency of instrumentation and data collection methodologies for future research studies designed to reduce the impact of overweight and obesity on children of low-income, rural families.
- Learn more about the fruit and vegetable consumption of the families in which low-income, preschool, rural children reside.
- Determine how the findings could be incorporated into the FSNE, EFNEP, and Washington Hospital County Community Health Outreach programs in the coming programming year.
Background

• Grandparents are important caregivers for preschool-aged children.
  – 22.9% of children under 5 years old who live with their mothers are cared for by their grandparents (US Census Bureau, 2008).

• Mothers and grandmothers play an important role in determining what preschool-aged children eat and the lifelong eating habits they develop (Cooke, 2007; Lindsay, Sussner, Kim, Gortmaker, 2006; Savage, Orlet Fisher, & Birch, 2007).

• Children in rural Maryland do not eat the recommended amount of fruits and vegetables.
  – Only 24.8% of children under 18 in rural counties in MD get the recommended amount of fruits and vegetables each day (Maryland Behavioral Risk Factor System, 2006).
Method

• Snowball sampling
• Surveyed 62 mothers & grandmothers (44 mothers, 18 grandmothers, 14 matched intergenerational pairs)
  - 13 phone surveys (5 mothers, 8 grandmothers)
  - 32 in-person surveys (28 mothers, 4 grandmothers)
  - 17 mailed surveys (11 mothers, 6 grandmothers), 58.6% response rate
• 65 question survey covering food preferences, feeding practices, resources, and food security
Sample (full sample)

<table>
<thead>
<tr>
<th></th>
<th><strong>Mothers</strong> (n=44)</th>
<th><strong>Grandmothers</strong> (n=18)</th>
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<tbody>
<tr>
<td><strong>Mean Age</strong></td>
<td>30 years</td>
<td>53 years</td>
</tr>
<tr>
<td><strong>Race/ethnicity</strong></td>
<td>68% African American 23% white 2% Hispanic or Latino 7% biracial/multiracial</td>
<td>72% African American 29% white</td>
</tr>
<tr>
<td><strong>Education Level</strong></td>
<td>9% less than high school 39% high school 36% some college 11% college 5% graduate school</td>
<td>11% less than high school 33% high school 39% some college 11% college 6% graduate school</td>
</tr>
<tr>
<td><strong>Median Monthly Income</strong></td>
<td>$1770 / month</td>
<td>$2590 / month</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td>52% single 34% married or cohabiting 14% divorced/widowed/separated</td>
<td>28% single 50% married or cohabiting 22% divorced/widowed/separated</td>
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Grandmothers Involved in Grandchildren’s Care & Feeding

• More than 75% of the grandmothers reported caring for their grandchildren occasionally.
• 83% reported making or buying some or all of the food their grandchildren ate.
• 61% of the grandmothers always or most of the time paid for the food that their grandchildren ate with them.

• The majority of grandmothers (72%) reported that they sometimes served their grandchildren an evening meal (Figure below).

![Pie chart showing grandmothers' involvement in feeding grandchildren]

- Always (17%)
- Sometimes (72%)
- Almost never or never (11%)
Accessibility and availability not problematic

- 77% utilized their own car to obtain groceries
- 71% felt their neighborhood had everything they needed to meet daily grocery shopping needs

Affordability of healthier food a concern

- 30% of the sample reported experiencing difficulty paying for food.
- 60% indicated that fruits and vegetables were too expensive to purchase at least some of the time.
Affordability of Fruits and Vegetables

- Food Insecurity: “limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable food” (Hamilton, Cook, and Thompson, 1997)

- Those with high or marginal food security reported being able to purchase fruits and vegetables more often than those with low or very low food security.

<table>
<thead>
<tr>
<th>Food Insecurity Status of Full Sample</th>
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<tbody>
<tr>
<td>High or marginal</td>
<td>53%</td>
</tr>
<tr>
<td>Low</td>
<td>42%</td>
</tr>
<tr>
<td>Very Low</td>
<td>05%</td>
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</table>
Fruit and Vegetable Consumption

• 90% reported liking fruits and vegetables.
• Mothers and grandmothers reported eating less than the daily recommended amount of fruits and vegetables.
  – Only 27% reported eating fruit more than once per day.
  – Only 45% reported eating vegetables more than once per day.
  – Only 5% reported eating vegetables three or more times per day.
• Mothers and grandmothers reported having a supply of fruits and vegetables in their home.
• 12 of the 20 fruits and vegetables listed were reported to be present in the home.
Fruit and Vegetable Consumption

Approximately 75% reported always or almost always serving vegetables for the evening meal.

Frequency with which sample serves vegetables for the evening meal

- Always or almost always (74%)
- Sometimes (23%)
- Almost never or never (3%)

Only 28% reported always or almost always serving fruit for the evening meal.

Frequency with which sample serves fruit for the evening meal

- Always or almost always (29%)
- Sometimes (60%)
- Almost never or never (11%)
Fruit & Vegetable Consumption Under Recommended Levels

- The respondents’ children/grandchildren did not consume the daily recommended amount of fruits and vegetables.
- Only 7% of mothers reported their children ate vegetables three or more times per day; 24% reported their children ate fruit three or more times per day.
Conclusions & Recommendations

- Grandmothers are a potential population due to their involvement in food purchasing and serving to their grandchildren
  - Such grandparent involvement should be explored in-depth and considered for inclusion in nutrition education programs.
- Paying for food was challenging; low food security is a deterrent to fruit and vegetable intake.
- Fruit and vegetable intake was below the recommended servings
  - Direct education of family members regarding the nutritional and health values of fruits and vegetables and how to manage food resources may have an effect on increasing intake.
  - Gardening could be combined with nutrition education to reduce cost of fruits and vegetables.
Recommendations

• A coordinated, multi-disciplinary, longitudinal, cross-departmental, inter-agency and inter-association initiative is likely needed to adequately increase fruit and vegetable intake at a reasonable cost for long-term health benefits.

• Intake could be addressed collectively through partnerships or collaborations among The University of Maryland Cooperative Extension, the state Departments of Agriculture, Education and Health and Mental Hygiene; non-profits, community groups and agribusiness.
Lessons Learned

• Community partners are vital for accessing low-income individuals.
• Some questions could better inform our knowledge base if revised.
• Important to facilitate the respondents’ ease of participating in study (offer childcare for respondents, ensure privacy).
• Need to understand the benefits and drawbacks of utilizing in-person, phone, and mailed interviews with this population.
  – In-person interviews yield higher response rates but are more difficult to schedule
  – With phone interviews, some participants were concerned about using cell-phone minutes
  – Lower response rate for mailed interviews
Recommendations for Future Research

• Utilize community partners to conduct exclusively in-person interviews.
• Obtain a larger sample of matched intergenerational pairs.
• Based on the pilot test, revise instrument to remove ineffective questions.
• Additional investigation into the nature of the mother-grandmother relationship might provide knowledge useful for designing interventions.
• A longitudinal study would permit examination of change over time.
• If interventions target mothers and grandmothers, a pre and post-test is recommended.