

**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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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

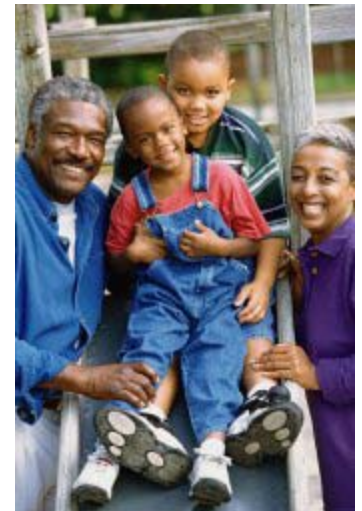
- Test the appropriateness, cost-effectiveness, and efficiency of instrumentation and data collection methodologies for future research studies designed to reduce the impact of overweight and obesity on children of low-income, rural families.
- Learn more about the fruit and vegetable consumption of 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

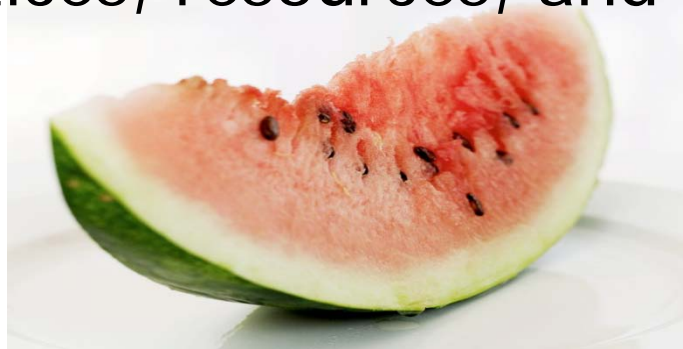
- Grandparents are important caregivers for preschool-aged children.
 - 22.9% of children under 5 years old who live with their mothers are cared for by their grandparents (US Census Bureau, 2008).
- Mothers and grandmothers play an important role in determining what preschool-aged children eat and the 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



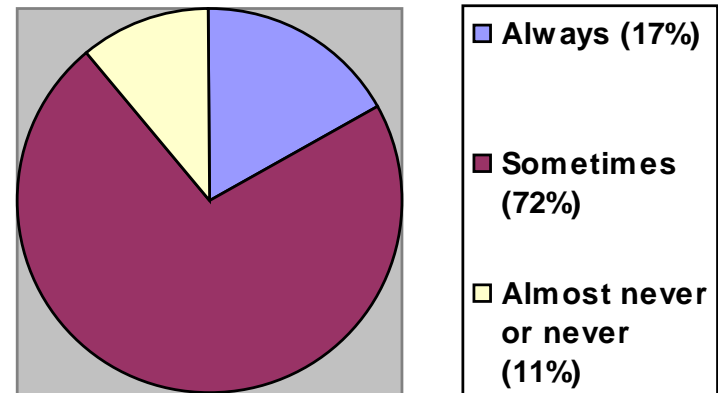
Sample (full sample)



	Mothers (n=44)	Grandmothers (n=18)
Mean Age	30 years	53 years
Race/ ethnicity	68% African American 23% white 2% Hispanic or Latino 7% biracial/multiracial	72% African American 29% white
Education Level	9% less than high school 39% high school 36% some college 11% college 5% graduate school	11% less than high school 33% high school 39% some college 11% college 6% graduate school
Median Monthly Income	\$1770 / month	\$2590 / month
Marital Status	52% single 34% married or cohabiting 14% divorced/widowed/separated	28% single 50% married or cohabiting 22% divorced/widowed/separated

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).





Accessibility, Availability, and Affordability of Fruits/Vegetables

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.

Food Insecurity Status of Full Sample	
High or marginal	53%
Low	42%
Very Low	05%

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.

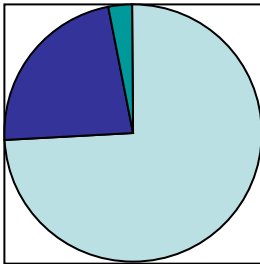


Fruit and Vegetable Consumption

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

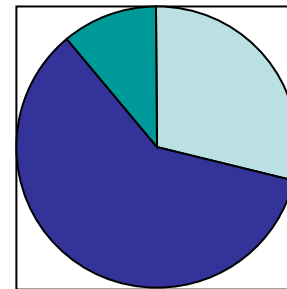
Only 28% reported always or almost always serving fruit for the evening meal.

Frequency with which sample serves vegetables for the evening meal

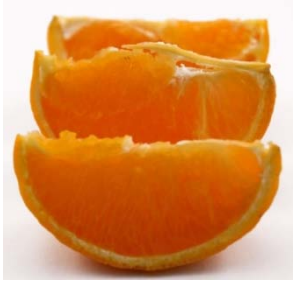


- Always or almost always (74%)
- Sometimes (23%)
- Almost never or never (3%)

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.

