Using UPC scanning methods to characterize household food supplies of multi-ethnic low income minorities

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Abstract

Most characterizations of food stored in the home for everyday use have been based on average household food inventories derived from food frequency questionnaires of middle to high-income households, and thus are unlikely to reflect food stores of low-income households. Therefore, this study sought to accurately characterize household food supplies of low-income minority families by inventoring 30 African-American and 30 Oaxacan-American low-income households with children, in an urban center of New Jersey.

For both groups, grains accounted for the greatest percentage of kilocalories (>40%). The greatest percentage of total fat was found in meat/protein foods in African-American households and in fats and oils in Oaxacan households. The Oaxacan households had a greater percentage of calcium from the dairy group than the African-American households (32.7% vs. 18.5%) while also having a greater proportion of milk and 64% in the African-American households.

An understanding of the types and nutrient content of foods on hand in diverse low-income households can lead to more ecologically valid nutritional interventions.

Methods

- Participants were recruited using snowball sampling.
- A survey recorded demographic information and emergency preparedness behaviors.
- Home food inventories were conducted using a universal Product Code (UPC) scanning technology linked to a nutrient database.
- Inventoried food items were categorized into:
  - Dairy
  - Meat/Proteins
  - Fruits & Vegetables
  - Grains
  - Sweets
  - Salty/Fatty Snacks
  - Fats & Oils
  - Miscellaneous

Results

- Grains
  - Grains contained the most kilocalories and sodium in both samples’ households.
  - Dry beans (e.g., rice, pasta, and breads) comprised 75% of African-American and 91% of Oaxacan household grain calories.

- Meat/protein
  - Meat/protein contained the most total fat in African-American households.
  - Meat/protein contained the largest amount of saturated fat and cholesterol in both samples’ households.

- Fats and oils
  - Supplied the most total fat in Oaxacan households.

- Dairy
  - Comprised ~5% of total calories in both samples’ households.
  - Non-dairy dessert items (e.g., milk, sour cream, yogurt) were more common in Oaxacan households (96%) versus 64% in the African-American households.
  - Dairy provided significantly more calcium in Oaxacan than African-American households (33% vs. 19%).

- Fruits & Vegetables
  - Fruit and vegetables comprised ~10% of calories and 60% vitamin A in both samples.
  - Thermally processed fruits and vegetables (i.e., canned and jarred) were significantly more common in African-American than Oaxacan households (80% vs. 32%).
  - Fresh fruits and vegetables were more common in Oaxacan than African-American households (51.6% vs. 5.5%).

- Sweets
  - Provided the largest percentage of total sugar.

Conclusions

- In using UPC scanning methods to characterize household food supplies of multi-ethnic, low income minorities, African American and Oaxacan, it was found that:
  - Interventions to reduce the fat content of meats, increase calcium, and decrease sodium in home food supplies could improve the food supply in African-American households.
  - Interventions to reduce the amount of sugar in the household food supply, especially from sweetened beverages, and to increase the amount of low-fat dairy products (calcium) could improve the food supply in the Oaxacan Households.

Strengths

- Time efficient method reduces participant burden.
- Increased accuracy over previous home food inventory methods.
- No households were inventoried during major holiday periods.

Weaknesses

- Does not make assumptions about method of preparation, rate of use, or food purchased/eaten outside the household.
- Does not distinguish between regularly eaten foods and foods stored for special occasion such as birthdays or holidays.

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