A Comparison of Household Food-Security Status and Dietary Intake of Food Box Recipients in Middle Tennessee

Sandria Godwin, Fisseha Tegegne, and Leslie Speller-Henderson

Food security remains a challenge in the United States. Research by Nord et al. (2002) shows that food security in the country declined between 1999 and 2001. Over the same period, food insecurity rose by 0.6 percent and the prevalence of hunger increased by 0.3 percent. Data from the above source indicates that in 2001, 10.7% of U.S. households (11.5 million people) were food insecure. Nord et al. (2002) note "About one-third of food-insecure households (3.5 million, or 3.3 percent of all U.S. households) were food insecure to the extent that one or more household members were hungry at least some time during the year because they could not afford enough food " (p. iii). The balance of the food-insecure households avoided hunger by acquiring food from various sources. Work by Rowley (2000), among others, shows that food insecurity in the Southern region has been higher than the national average since 1995. Federal food assistance through food stamps, free or reduced-price school lunches, and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), is aimed at improving food security and nutritional well-being of those who qualify. Requirements that should be met to receive such assistance include job training and job searching for Food Stamps and time limits for WIC. Data by Nord et al. (2002) show that 51.5% of food-insecure households received such assistance.

Working people, whose income and/or assets fall above the designated Federal poverty guidelines, have to resort to other sources of food assistance, of which the use of non-profit food-assistance sites has become increasingly important. Nord et al. (2002) indicate that in December 2000, 18.6% of all food-insecure households received emergency food from a food pantry, church, or food bank. They maintain that about three million households (2.8% of all U.S. households) reported getting emergency food from food pantries, religious organizations or food banks one or more times during 2001.

Tiehen (2002) reports that there are about 34,000 food pantries in the U.S. They receive food donations from the government, private businesses, and churches, and are run primarily by volunteers who assist both in packaging and distributing the donated food items. The number of such outlets and their growth over the years has varied for different locations. This paper focuses on Second Harvest satellite Food Bank sites in selected locations in Middle Tennessee.

The Second Harvest Food Bank of Middle Tennessee operates four programs: Emergency Food Box, Community Food Partners, Project Preserve, and Kids Café. The Food Bank, which serves 37 counties in the state, provides food for over 350,000 people each year. During the 1999/2000 fiscal year the Food Bank distributed over 10 million pounds of food. Approximately half of Second Harvest's clients are employed (Second Harvest Food Bank of Middle Tennessee 2002).

Objective

This study assessed the food security and dietary status of households receiving food boxes in selected Middle Tennessee Counties in order to have a better understanding of the circumstances at the local level.

Data and Methodology

The population sample consisted of a mix of 176 male and female adults ranging in age from 18 to 65, representing various ethnic and cultural groups. Lists of food-box distribution sites were obtained from Second Harvest Food Bank of Nashville. The 13 satellite locations used were located in Metropolitan Davidson County, Tennessee and the surrounding non-metropolitan counties of Cheatham, Dickson, Montgomery, Putman, Smith, Robertson,

Godwin is professor in the Department of Family and Consumer Sciences, Tegegne is research associate professor, and Speller-Henderson is research associate in the Cooperative Agricultural Research Program at Tennessee State University.

Rutherford, and Wilson. Interviewers approached persons who came into the site to request a food box and asked them to complete a short survey. A $10 grocery-store certificate was provided as an incentive to those willing to take part in the study. The participants completed an in-person interview that consisted of nutrition-knowledge and food-habit questions, the 18 core USDA Food Security questions (Bickel et al. 2000), socio-economic and demographic information, and a 24-hour dietary recall.

Using the affirmative responses to the 18 core USDA Food Security questions (Bickel et al. 2000), the respondents were categorized as food secure, food insecure without hunger, food insecure with moderate hunger, and food insecure with severe hunger. Nutrient intakes were determined using the Nutritionist V Dietary-Analysis Program (N-squared Computing, Inc.), and were compared to the Recommended Dietary Allowances (RDA). Percentages of respondents meeting the recommendations were computed (National Academy of Sciences 1997-2002). The data was statistically analyzed using the Statistical Package for Social Sciences (SPSS).

Results and Discussion

The majority of the respondents were female (68.8%) between the ages of 25 and 50 (Table 1). An approximately equal number of Blacks and Whites completed the study. The largest percentage of participants (46.8%) had not completed high school or obtained a GED, and had reported annual household incomes of under $5,000 (30.5%) or $5,000-9,999 (26%). Only about half (49.4%) received food stamps, and most were employed (59.7%).

As can be seen in Table 2, a higher percentage of males (67.3%) than females (57.9%) was classified as food insecure; however, the difference was not significant ($P < 0.05$). A higher percentage of males were food insecure without hunger, while the highest percentage of food-insecure females fell in the moderate-hunger category. Overall, 39.2 % of respondents were food secure. This percentage

Table 1. Socio-economic and Demographic Characteristics of Recipients.

Category	Percent (n=176)
Gender	
Male	31.1
Female	68.8
Age	
19-24	11.9
25-50	71.0
51+	17.1
Race	
White	45.5
Black	49.4
Other	5.1
Educational Level	
< High school	46.8
Diploma/GED	27.4
Additional Training, No degree	21.2
College degree	4.6
Income	
Under $5000	30.5
$5000–9999	26.0
$10,000–19,999	30.5
$20,000 or above	12.9

Table 2. Food-Security Status by Gender of Recipients. [a]

Status	Percent Male (n=55)	Percent Female (n=121)
Food Secure	32.7	42.1
Food Insecure without hunger	25.5	20.7
Food Insecure with moderate hunger hunger	23.6	27.3
Food Insecure with severe hunger	18.2	9.9

[a] No significant differences were found between genders at the 0.05 level.

Table 3. Mean Nutrient Intake by Gender.

Nutrient	Male	% meeting RDA	Female	% meeting RDA
Calories	2823	56	2084	44
Protein	129	85	93	73
Vitamin A	879	38	619	29
Vitamin C	124	33	68	30
Calcium	729	24	561	16
Iron	17.5	75	12.7	20
Folate	320	27	223	16
Zinc	11.8	44	7.5	37
Cholesterol	368	53	272	67
Fiber	19	33	11.7	9
Sodium	4805	26	3343	39
Percent Fat	30	44	32	39

Table 4. Mean Nutrient Intake by Food-Security Status.

Nutrient	Secure (n=69)	Insecure Without Hunger (n=39)	Insecure Moderate Hunger (n=46)	Insecure Severe Hunger (n=22)
Calories	2456	2392	2249	1872
Protein	115[a]	113[a]	96[a]	68[b]
Vitamin A	810[a]	904[a]	568[ab]	269[b]
Vitamin C	91	85	99	41
Calcium	693[a]	688[a]	558[ab]	343[b]
Iron	15.9[a]	15.2[a]	13.9[a]	7.6[b]
Folate	283	271	235	164
Zinc	9	9	8	6
Cholesterol	315[a]	355[a]	292[ab]	185[b]
Fiber	16[a]	13	12[a]	8[b]
Sodium	4104	3924	3553	3137
Percent Fat	29	32	33	29

[a, b] values with different superscripts are significantly different ($p<0.05$).

is much higher than that reported nationwide (Nord et al. 2002), a finding that is not surprising given the respondents in this study were recruited at food-box satellite locations.

Mean nutrient intakes of respondents by gender are shown in Table 3. Mean intakes of males were particularly low for folate and fiber, while mean sodium intakes were more than twice what is recommended. Mean intakes of females were less than recommended for all nutrients except protein, sodium, and fat. Less than 50 percent of both male and female respondents met the recommended intake for vitamin A, vitamin C, calcium, folate, zinc, fiber, sodium, and percentage of calories as fat. In addition, less than half of the females interviewed met the requirements for calories and iron.

Compared to results found for individuals below 131% of the poverty level nationwide (U.S. Department of Agriculture 1999), males in the current study had higher mean intakes of protein, vitamin C, folate, and sodium. Females only had higher mean intakes of calories, protein, and sodium. The reason for these high intakes, especially on a day before the respondents came to request food assistance, needs further investigation.

As can be seen in Table 4, the mean nutrient and calorie intake generally decreased as the food-security status diminished. All four groups were low in calcium, folate, zinc, and fiber, and were high in sodium. Intakes for those in the "insecure with severe hunger" category were significantly lower for protein, vitamin A, calcium, iron, and fiber. Cholesterol was also significantly lower for this group; however, this is a desirable occurrence.

Implications

For most nutrients mean intakes decreased as the food-security status declined; however, this finding was not true for all individuals in each category. A large percentage of individuals met the requirements for nutrients even though they were categorized as food insecure. The reasons for this finding need to be determined. Perhaps other food sources were available that provided additional needed nutrients. Thus, food-security status should not be used as the sole basis for determining potential nutritional deficiencies. Education regarding wise food-purchasing practices to aid in selection of more nutrient-dense foods may be valuable.

References

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