Factors Affecting Nutrient Intake of the Elderly

The number of Americans age 60 and over is expanding rapidly: from about 5 million in 1900 to about 42 million in 1990, a figure that is expected to more than double by 2030. The elderly, who are about 18 percent of the population, account for about 30 percent of all health care expenditures in the United States.

Poor nutritional status is a primary concern for the elderly. Nutritionally inadequate diets can contribute to or exacerbate chronic and acute diseases and hasten the development of degenerative diseases associated with aging. In the past, it has been difficult to determine the scope of nutritional problems among the aged; however, methods of assessing dietary intake have improved. Providing information on the relationship of socioeconomic and other factors to nutrient intake is basic to improving the health and well-being of the elderly.

The purpose of this study was to estimate the effect of a number of selected characteristics of households and their members on nutrient intake of the elderly. Data were from the U.S. Department of Agriculture's (USDA) 1989-91 Continuing Survey of Food Intakes by Individuals (CSFII). The sample consisted of individuals 60 years of age or older who were the nominal head of their household. In households with both a female and male head of household, only the female's nutrient intake was considered. Elderly individuals who were not nominal heads of households were excluded from this analysis, thus the focus was on those elderly who had some autonomy in making their food choices. The final sample consisted of 1,373 women and 193 men; their average age was 71.

Table 1. Mean nutrient intake of the elderly and comparison with 1989 Recommended Dietary Allowances[1]

	Women		Men	
Nutrient	Mean intake	Percent of recommended allowance	Mean intake	Percent of recommended allowance
Energy (kcal)	1,345.3	70.8	1,733.0	75.3
Protein (gm)	56.1	112.2	71.9	114.1
Total fat (gm)	50.6	NA	67.8	NA
Vitamin E (mg)	6.4	80.0	7.3	73.0
Vitamin C (mg)	87.9	146.5	92.3	153.8
Niacin (mg)	16.4	125.4	20.7	138.0
Vitamin B_6 (mg)	1.4	87.5	1.7	85.0
Calcium (mg)	572.5	71.5	693.1	86.6
Phosphorus (mg)	893.2	111.6	1,127.1	140.9
Magnesium (mg)	212.6	75.9	248.6	88.8
Iron (mg)	11.4	114.0	13.9	139.0
Zinc (mg)	8.3	69.2	10.2	85.0

[1]Mean intakes calculated using the1989-91 CSFII 3-year household weights.

Multiple regressions were used to explain nutrient intake. Twelve nutrients were selected for study because previous research has found that diets of the elderly are often below recommended levels[1] for these nutrients: Energy, protein, fat, vitamin E, vitamin C, niacin, vitamin B_6, calcium, phosphorus, magnesium, iron, and zinc. The sample's mean intakes fell below the RDA for energy, vitamins E and B_6, calcium, magnesium, and zinc; however, during the 3-day reporting period, the variation was wide (table 1). Among women, over one-third had nutrient intakes below the RDA for energy and for each nutrient (except fat—for which no RDA exists). Among men, over one-third had intakes below the RDA for energy and each nutrient, except niacin and phosphorus (table 2).

Socioeconomic characteristics of elderly individuals that influenced nutrient intake were gender, race, educational attainment, and employment status of the household head. General household characteristics investigated included degree of urbanization, geographic region, socialization available, food stamp participation, and receipt of surplus commodity foods.

[1]Dietary studies frequently define an adequate, nutritious diet as one that fulfills the Recommended Dietary Allowances (RDA). The RDA specify the levels of average intake of nutrients essential for maintaining normal body functioning for a healthy population. Diets under 100 percent of the RDA are asssociated with, but not necessarily mean, deficiency.

Table 2. Percentage of elderly falling below 1989 Recommended Dietary Allowances for selected nutrients

Nutrient	Women	Men
Energy (kcal)	89	83
Protein (gm)	38	37
Vitamin E (mg)	79	80
Vitamin C (mg)	40	48
Niacin (mg)	34	23
Vitamin B_6 (mg)	68	72
Calcium (mg)	82	68
Phosphorus (mg)	41	20
Magnesium (mg)	83	86
Iron (mg)	51	35
Zinc (mg)	87	88

Note: Recommended Dietary Allowances are for adults 51 years of age and over.
Source: Elderly Heads of Household, Continuing Survey of Food Intakes by Individuals, 1989-91, U.S. Department of Agriculture.

Results

Education

This characteristic of the household head was associated directly with nutritional knowledge and a more balanced diet for individuals in the household. In households with both a female and male head, education of the female head served as a proxy for nutritional knowledge in the household. (In elderly households, it was assumed that the female would be the primary decisionmaker who selected and prepared the food.) Consumption of most of the selected nutrients tended to be related positively to additional formal education and was statistically significant for vitamins C, E, and B_6, niacin, calcium, phosphorus, and magnesium.

Region and Degree of Urbanization

Elderly residents in the South consumed fewer calories and less protein, fat, vitamins C and B_6, niacin, phosphorus, and magnesium than did the elderly in the Northeast. Levels of nutrient intake for elderly residents in the South were not significantly different from those in the Midwest or West, although the Southern elderly consumed more calcium than did the Midwestern elderly. Findings showed that urban elderly residents consumed lower amounts of most nutrients than did nonurban elderly, although this was statistically significant for iron only. The literature reports that the degree of urbanization reflects the potential for the production of home foods, diversity of types of stores, differences in cultural and economic opportunities, and exposure to mass media.

Socialization

Some researchers theorize that the elderly experience a decrease in appetite and interest in food when they eat alone, with the result being poor nutritional intake. This study examined the size of the household. If the household contained other members, then the opportunity for meal socialization was present. However, this factor was not significant for any nutrient studied.

Poverty, Food Stamp Participation, and Receipt of Surplus Food

A measure of the household's ability to purchase a nutritionally adequate diet is the amount of household income as a percentage of the appropriate poverty threshold. As reflected by this index, poverty was related to significantly lower intake of all the selected nutrients except vitamin E, calcium, and iron. Use of food stamps increases an individual's food expenditures. And although some researchers have found a significant effect of food stamp participation on nutrient intake, this study found no relationship between the two factors. Similarly, receipt of commodity foods[2] was not a significant factor affecting nutrient intake. These findings have been confirmed in previous studies.

Race, Age, and Gender of Individual

Results of this study suggest that nutrient consumption by the elderly differs based on race. Compared to elderly Whites, elderly Blacks consumed fewer calories and less total fat, vitamins E and B_6, niacin, calcium, phosphorus, magnesium, iron, and zinc. Hispanic

[2]Commodity foods are distributed through the Commodity Supplemental Food Program, from which both funds and commodity foods are donated to States *to supplement* the diets of various target populations, including persons 60 years and older.

elderly consumed more protein, compared with elderly Whites. Intake of protein and niacin was significantly higher among the ''young'' elderly—those between 60 and 70 years old—than it was for those over 70 years old. Compared with elderly men's diets, those of elderly women were significantly lower in all nutrients studied except for vitamin C.

Employment of Head of Household
Employment of the head of household could reflect a more active lifestyle for elderly residents in the household. In this study, employment status was not significantly related to nutrient intake.

Sensitization to the Relationship Between Diet and Health
The hypothesis stated that a good predictor of nutrient intake might be a person's knowledge about the relationship between diet and health. Data from the Diet and Health Knowledge Survey, which was conducted among the 1989-91 CSFII households, were linked to information on food consumption, and thus, nutrient intake. This variable had a minimal effect on respondents' nutrient intake, except for vitamin C and magnesium.

Conclusions

Several characteristics of the elderly and their households influenced their nutrient intake: education, income, urbanization, race, age and gender, and, to some extent, region. These exploratory findings indicate that food and nutrition programs for the elderly would be most effective if directed toward residents in central cities, the less educated, and Blacks. Budgeting and planning low-cost nutritious meals should be emphasized because of the relationship between socioeconomic status (income and education variables) and nutrient intakes.

Nutritional well-being is integral to elders' overall health, independence, and quality of life. Policymakers need to seek effective methods of achieving optimal nutrition in the older population, and researchers should strive to provide better measurements of the variation in nutrient intake and their relationships to socioeconomic and other factors.

Source: Weimer, J.P., 1998, *Factors Affecting Nutrient Intake of the Elderly*, Agricultural Economic Report No. 769, U.S. Department of Agriculture, Economic Research Service.