Description of a Mixed Ethnic, Elderly Population. III. Special Diets, Food Preferences, and Medicinal Intakes

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Background. The objective was to assess the use of physician-prescribed special diets, food preferences, and daily and occasional drug use by elderly participants in a Title III-C Nutrition Program.

Methods. Data were collected by nonrandom interviews of congregate and meals-on-wheels clients. Chi-square was used to assess whether food and drug behaviors were related to six population variables: ethnicity, age, gender, congregate versus meals-on-wheels clients, proportion of noon meal usually eaten, and whether clients lived alone or with others.

Results. Special diets and daily and occasional medications showed no significant differences with regard to the six variables. Broccoli was the food disliked most frequently. Suggestions that certain foods be served more frequently were greater among white than black clients ($p < .001$) and among home delivery than among congregate clients ($p < .005$). Persons who regularly ate half or less of the noon meal made more suggestions for cooking foods differently ($p < .005$) and had longer lists of favorite foods ($p < .001$) than those who usually ate most of or all of the meal. Persons who lived alone had more suggestions for cooking foods differently ($p < .005$) and serving certain items more often ($p < .05$) than those who lived with others. Favorite foods, changes in cooking methods, and frequency of offering certain foods were not related significantly to age or to gender.

Conclusions. Certain suggested changes in food choices and preparation can be implemented within Title III guidelines and may improve food intakes. While medicinal intakes were similar to those reported previously for the elderly cohort, there is reason for concern with regard to drug-induced illness.

ELDERLY persons participating in a Title III-C Nutrition Program by coming to a senior center (congregate clients) or receiving home-delivered meals (meals-on-wheels clients) were evaluated for (a) previous use of special diets, (b) food preferences, and (c) frequency and nature of medicinal intakes.

METHODS

A description of the subjects and procedures for data collection and analysis has been published (1). Informed consent was given by each participant prior to being interviewed. This form was approved by the Human Research Review Committee at Georgia State University, the administrator of the Dekalb Community Council on Aging (DCCOA), and the directors in the three participating senior centers.

During each interview, responses were obtained as to whether a special diet had been prescribed by a physician, the health condition for which the diet was prescribed, a list of favorite foods, food likes and dislikes among items provided often in the noon meals, dislikes in style of preparation of items in the noon meal, frequency of serving certain food items, and daily and occasional medicinal intakes. Names of the medications taken by clients who received home-delivered meals were taken directly from the vials that contained them at the time of the in-home interview. The congregate clients, who were interviewed at the senior centers, usually were telephoned at home the evening after the interview; they were asked to bring all pharmaceutical bottles to the telephone and spell the names of their medications for inclusion in questionnaire responses. In a few instances, congregate clients had their medications with them at the senior center.

Responses pertaining to food preferences and medicinal intakes were examined for a statistically significant relationship to six independent variables: ethnicity, age, gender, type meal (congregate or home delivery), whether on most days the client ate half or less versus more than half or all of the noon meal, and socialization factor (lived alone vs lived with others).

RESULTS

Special Diets

Among the 103 senior citizens in this study, 60 had never been advised to implement a special diet. Among the 42% of subjects who had been given diet prescriptions, 63% were for cardiovascular problems; modifications varied with restriction of cholesterol, fat, salt, or energy, or a combination of these. Other modifications were 26% for diabetes, 8% for gastritis/peptic ulcer/hiatus hernia, and 3% for colostomy/ileostomy.

Among the clients who previously had been given diet prescriptions, chi-square analysis showed no significant relationships with regard to the six selected variables.

Food Preferences

One third of the subjects suggested that certain foods in the noon meal were served too infrequently (Table 1); most frequently cited were a whole piece of fish (not croquettes), rice, tossed salad, soft fruits (fewer cakes and custards), and more sweet potatoes (candied yams, sweet potato pie, and sweet potato souffle).

Forty-three percent of the clients wished certain food items to be prepared differently (Table 1). The main complaints were for more salt and seasonings, fewer gravies and greasy foods, elimination of pressed turkey ("rubbery"), shorter cooking time for broccoli, more sliced and fewer mashed potatoes, less salad dressing on slaw, omission of celery and peppers in potato
salad, baked instead of raw apples, more rice and less bread, and greens, beans, and peas cooked with meat (fat-back, streak-o-lean, or ham hock).

Forty-four percent of the clients expressed no food dislikes (Table 1). Among those who did, broccoli was cited most frequently (21%), followed by boiled okra (10%), spinach (10%), and liver (8%). Seventy-four percent of clients reported favorite foods (Table 1). Fish and chicken were the meats cited by 42% of the positive respondents; among favorite vegetables, turnip and collard greens were cited by 28%, string beans by 10%, and candied sweet potatoes by 8%. Sweet potato pie (14%) and ice cream (8%) were the most favored desserts. Six clients preferred buttermilk and four preferred chocolate milk in lieu of the 2% fat milk that was served daily.

White elders (57%) made more suggestions than blacks (16%) for foods they wanted served more often ($\chi^2 = 21.68, p < .0001$). Home delivery clients (46%) made more suggestions than congregate clients (23%) for specific foods to be served more often ($\chi^2 = 4.79, p < .005$). Persons who regularly ate half or less of the noon meal made more suggestions for cooking foods differently ($\chi^2 = 11.12, p < .005$), and provided longer lists of favorite foods ($\chi^2 = 9.09, p < .001$). Persons who lived alone had more suggestions for cooking food differently ($\chi^2 = 3.78, p < .005$) and serving certain items more often ($\chi^2 = 4.15, p < .05$) than those who lived with other persons. While more women (44%) than men (32%) suggested different cooking methods, the difference was not significant. Favorite foods, change in cooking methods, and frequency of offering certain foods were not related to age or gender.

Food dislikes did not relate significantly to any of the six variables in this study.

**Medications**

**Daily.**—Eighty-two percent of the population sample used medications daily; this included 71% of all men and 81% of all women. Users constituted similar proportions of the congregate (80%) and home delivery (85%) participants. While the number of persons taking daily medications was not significant by type of meal, the average number of drugs taken was five per day for home delivery and three per day for congregate clients.

The most frequently used daily medications (Table 2) were analgesics, mainly nonsteroidal, antiinflammatory prescription drugs; 39% of the population sample used them, predominantly for arthritis. An additional 10% used aspirin daily. Thirty-five percent of the sample was supported by drugs for congestive heart failure, ischemic heart disease, and other cardiac problems. Nitro-patches and/or nitroglycerine for angina were used by approximately half of those with heart irregularities. Thirty-five percent of the population sample used antihypertensive drugs, 22% of these used diuretics, and 16% took potassium supplements. Mood drugs (for depression, anxiety, psychoses) were taken by 16% of clients; these were predominantly sedatives and tranquilizers. Hormone replacement therapy was practiced by 15%; three quarters of the latter used thyroid therapy, and the other replacements were for estrogen and progesterone. Ophthalmic medications were used by 13% of the subjects, three quarters of these for glaucoma. Thirty percent of the seniors were diabetic; two thirds of these were supported by oral hypoglycemic agents and the others by insulin. Laxatives and stool softeners were ingested daily by 11% of clients. Drugs for peptic ulcer and reflux esophagitis were prescribed for 10% of clients. Eight percent were medicated for asthma, chronic obstructive pulmonary disease and other respiratory problems, 7% for muscle cramps, 5% for seizures, and 4% each for insomnia, neutralization of gastric acidity, and urinary tract infection. Three percent or less (not shown in Table 2) used antibiotics, anticoagulants, antihistamines, antiallergenic drugs, hypcholesterolemic agents, stool tighteners, hypouricemic agents, and the anti-Parkinsonian drug, L-dopa.

Twenty-four percent of this sample took vitamin supplements, mostly multivitamin preparations, but 10 clients took vitamins C and E singly or in addition to the multivitamin tablet. Mineral supplements were used by 12%; these were calcium, zinc, and iron. The only other supplementary product taken regularly was alfalfa tablets, used by only one subject.

Fifty percent of the consumers of daily medications were 70–80 years of age; persons older than 85 constituted the smallest group (12%) of daily users. Other investigators have shown the peak use of prescription drugs to be among those aged 70–80, with a decline after 80 years (2).

**Occasional.**—Forty-two percent of the population sample used occasional medications; included were similar proportions of all men (43%) and women (41%). Among the users, there were equal numbers of congregate and home delivery clients; however, the average number of drugs among the occasional users was 2.2 by home delivery and 1.2 by congregate clients.

The most frequently and equally used occasional medications were analgesics and laxatives/stool softeners; these were followed by antacids. Medications for insomnia, vertigo, stool tightening, and antihistamines were used equally, followed by

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<th>Table 1. Food Preferences of an Elderly Population</th>
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<td>Responses</td>
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<td>More frequent servings of certain food items</td>
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<td>Listing of favorite foods</td>
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<th>Table 2. Daily Medications Taken by 85 Elderly Participants</th>
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<td>Type of Prescribed Medication</td>
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<td>Cardiac drugs</td>
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<td>Laxatives and stool softeners</td>
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<td>Asthma, COPD, other respiratory problems</td>
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<td>Drugs for muscle cramps</td>
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those for nausea and vomiting, anxiety, cold symptoms, hormone replacement (thyroid and estrogen), and depression.

There were seven congregate and five home delivery clients who reported neither daily nor occasional use of drugs. The average age of persons in this group was 75 years, and included was the oldest participant, 103 years, a congregate client.

Chi-square analysis of the number of medications, daily and occasional, indicated that there was not a significant relationship to any of the six variables in this study. The frequency in use of drugs related to medical conditions by DCCOA subjects is similar to that reported by others (3–6) and to the reported prevalence of chronic diseases in the U.S. elderly population (7).

**DISCUSSION**

**Food Preferences**

Suggestions made by the participants in this study that are easily manageable include more frequent inclusion in meal planning of fish; more sliced and less mashed white potatoes, or more rice; more sweet potatoes; more soft fruits and less cake and custard desserts; and added choices of buttermilk and chocolate milk in lieu of the 2% fat milk (except for therapeutic diets, which include skim milk).

Because of the emphasis on vitamins A and C in planning Title III meals for older people, broccoli has probably been overused, as it is a significant source of both vitamins (8). Most Southern elderly persons grew up in an environment in which greens were consumed frequently, and broccoli infrequently or not at all. Secondly, there is an inherent problem resulting from the process itself, in that food is cooked originally in one site; then delivered to a distribution site (which may or may not be a congregate site), where it is heated again; in the case of home-delivered meals, a third heating may occur in the client’s home. The result is an unattractive bronze-colored serving of broccoli, lacking the desirable firmness of its original texture, as well as a choice of vegetable with low priority in the culture of this population (9). A food which in its natural state is a significant source of vitamins A and C, after successive heating becomes mediocre or lacking in vitamin C, though the vitamin A is heat stable (10).

**Drugs**

Elderly people constitute 12% of the U.S. population, but take 30% of all prescription medications (6,7,11–14) and 40% of all nonprescription drugs (15). By the year 2030, the total drug expenditure by the elderly population is projected to be 40% (16). The average elderly person living at home takes 2–4 drugs/day (5,11,17); one fourth of noninstitutionalized elderly people take no medications (6). Institutionalized elders take 5–10 drugs/day (17). Elderly persons taking 2.1 drugs/day when admitted to a hospital took 5.5/day during hospitalization and 3.5/day on discharge (18).

The drugs that most frequently are implicated in drug-induced iatrogenesis are those for the treatment of hypertension, congestive heart failure, cardiac arrhythmias, lung disease, arthritis, psychotherapeutic disorders, and blood clots (6,11,12,17,19–23).

When both energy and nutrients were the criteria for evaluating adequacy of dietary intake of the DCCOA population sample, 41% had submarginal or inadequate intakes (1), and 82% of them took drugs daily. Nutrient deficiency resulting from drug–nutrient interactions may be more severe than one resulting from simple dietary deficiency (24). Chen and colleagues (3) state that worldwide malnutrition is due to lack of food supply, but for middle-class Americans, medications are a significant factor in nutritional deficiency. Estimates of nutrient intakes of DCCOA clients preclude effects of drug/drug and drug/nutrient interactions, although these subjects used a disproportionate share of drugs that have a high risk of adverse drug reactions (15,25). The prevalence of alcohol use among the elderly is 2%–5% in men and 1% in women over 65 years of age (20); at least half of the commonly used drugs cited above have the potential to react with alcohol (11,25). Alcohol use was not evaluated in DCCOA clients. However, because of the frequency in use of these high-risk drugs, the unknown behavior with regard to alcohol use, and the magnitude of submarginal and inadequate dietary intakes, a large segment of the DCCOA population sample is at risk of both malnutrition and drug-induced iatrogenesis. Hence, the nutritional status of our subjects may be lower than the values reported (1). Our low values are consistent with the report that 25%–50% of elderly patients admitted to the hospital and 40% of home care elderly patients are malnourished (25).

While the DCCOA investigation showed no significant age, gender, nor ethnicity effect on number of daily or occasional medications, others have reported an increase in total drug use with age (2,3,26), and an increase in prescription, but not over-the-counter, drug use with age (22). Other studies show the relationship of age to drug use to be controversial or unrelated (20,27). In several studies elderly women took more medications than men (2,11,13,22,23); blacks took significantly fewer prescription and nonprescription drugs than whites (2,5,13,26), and black women used more prescription drugs than black men (14). The most common prescription drugs taken by whites were pain relievers (5,26) and by blacks, antihypertensives (26).

The incidence of drug-induced illnesses (iatrogenesis) is greater in white females than in blacks of both genders (13,26). In one study, level of education showed no correlation with medication (22); in another, with higher education, use of nonprescription drugs by whites increased and by blacks decreased (26). Other sociodemographic factors that have been examined and showed no correlation with medication use by elderly people include marital status, income, and whether persons lived alone or with another (22).

**Conclusion**

Elderly persons who participate in Title III-C Nutrition Programs have food preferences which they articulate effectively and many of which, if implemented, may result in an increase in client satisfaction while simultaneously maintaining program compliance. Periodic solicitation of elderly clients with regard to food choices, frequency of offering certain items, and method of preparation may result in a decrease in plate wastage, while enhancing nutrient/energy intakes. The high incidence of polypharmacy practiced by the elderly population concurrently with a significant proportion who demonstrate inadequate nutrient/energy intakes indicate an exceptional vulnerability of this population to both nutritional deficiency and drug-induced illness.

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REFERENCES

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