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Nutrition Education for the Elderly in the US

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ABSTRACT

Eating behavior change as a result of nutrition education interventions as secondary prevention strategies can contribute to an increase in life expectancy and better health for older adults in the United States (U.S.). Many of the chronic conditions prevalent in older adults are modifiable by dietary changes, including heart disease, diabetes mellitus, hypertension, obesity and osteoporosis. Important demographic observations in the U.S. including the projected large increase in number of older adults by 2030 have implications for nutrition education focus and services. A comprehensive review of nutrition education interventions for older adults in the U.S. published in 1995 identified elements from adult education theories that contribute to the effectiveness of nutrition education. These elements have been the focus of more recent studies with older adults providing additional evidence for relationships between concepts from commonly used behavior change theories and dietary patterns or change. In the U.S, an important program contributing to nutritional adequacy of the diet for older adults is the Elderly Nutrition Program which provides resources for congregate dining and includes a mandatory nutrition education component. Nutrition education is also provided through clinic based programs, and print and broadcast media. Application of the Transtheoretical Model has shown that the level of interest or motivation to comply with dietary guidance may be greater for some older adults due to an increasing burden of chronic disease and poorer quality of life, while others may not feel a need to change lifestyle habits. (*J Community Nutrition* 4(1) : 51~58, 2002)

KEY WORDS : elderly · United States · nutrition education.

Introduction

Healthy eating behaviors contribute to the health, productivity, self-sufficiency, and quality of life for older adults (Drewnowski & Evans 2001). Changes in eating behavior resulting from nutrition education are most effective in the prevention of nutrition-related conditions when they are made early in life. Therefore, depending on the age of the individual, primary prevention may not be the goal for older adults. Instead, nutrition education can be provided as a secondary prevention strategy to treat or cure diseases in their pre-symptomatic stage, prevent the progression of disease, or enhance the quality of life. Eating behavior change as a result of nutrition education interventions can therefore contribute to an increase in life expectancy and better health for older adults (Amarantos et al. 2001).

Several important demographic observations in the U.S. have led to a growing concern about the health and well-being of older adults and have implications for nutrition education provided to older adults. As the post war "baby boom" generation reaches age 65, the population of older adults is expected to grow significantly with a doubling in size expected by 2030 (Fig. 1) (Administration on Aging 2001). In 2000, older adults (65 + years) numbered 35 million and represented 12.4% of the total U.S. population. By 2030, this number is expected to grow to 70 million, accounting for 20% of the population or one in every five Americans.

The population of older adults is also increasing because the average life expectancy is increasing. A child born in 2000 could expect to live 76.9 years, which is about 29 years longer than a child born in 1900 (Administration on Aging 2001). In the past two decades, there has also been a reduction in the death rates for the population aged 65 – 84.

The number and proportion of older adults living alone has increased in the past 30 years (Table 1). In 2000, over half (55%) of older adults lived with their spouse and about

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Table 1. Living arrangements for non-hispanic white older adults (Kramarow et al. 1999)

	% Living alone		% Living with spouse		% Living with others	
Age	Men	Women	Men	Women	Men	Women
65 – 74 years	13.4	30.4	79.0	55.8	4.5	12.1
75 – 84 years	20.0	51.9	72.7	33.3	5.7	13.4
85+ years	34.7	64.6	49.1	11.2	16.2	24.2

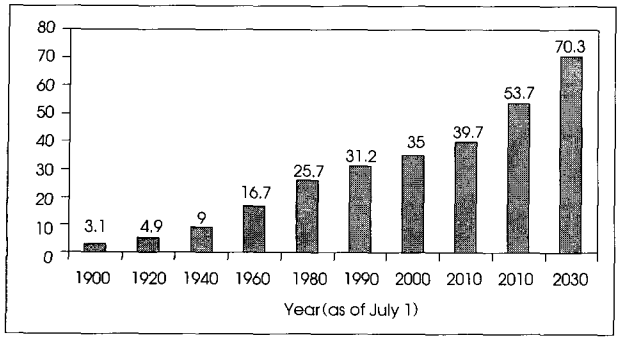

Fig. 1. Number of persons 65+, 1900 - 2030(numbers in millions).

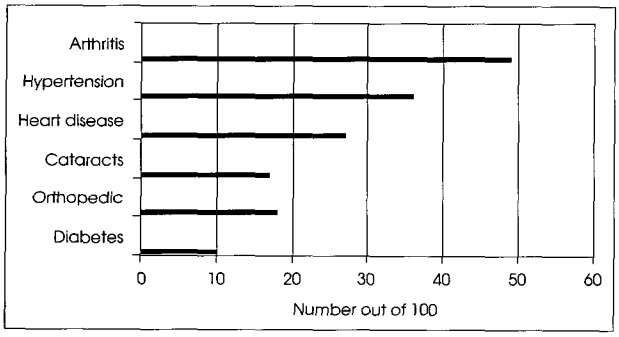

Fig. 2. Most frequently occurring conditions in older adults, 1996.

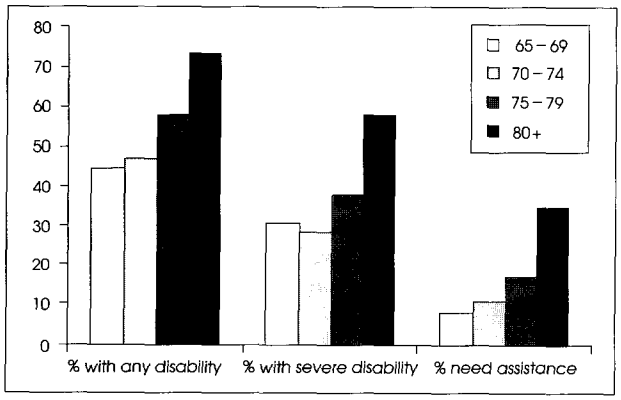

Fig. 3. Percent with disabilities, by Age : 1997.

30% lived alone (representing 40% of older women and 17% of older men). As people age, the number living alone increases, for example, almost half of women over age 75 now live alone (Administration on Aging 2001). Changes in marital status and therefore living arrangements are more prevalent for older women because they are more likely to be widowed (Saluter and Lugaila 1998). This is important because living arrangements have been shown to affect dietary quality among Caucasian adults (Davis et al. 2000) with those living with a spouse having better dietary quality.

In 2000, 12.8% of Americans age 65 and over were working or actively seeking work (Administration on Aging 2001). Between 1970 and 2000, the percentage who had completed high school rose from 28% to 70% and about 16% had at least a bachelor's degree. The median income of older persons in 2000 was $19,168 for men and $10,899 for women. About 1.6 to 2 million elderly households reported in 1998 that they did not have enough money to have the right types of food needed to maintain their health or simply did not have enough to eat (Food Security Supplement 1998).

Nutrition Education Needs for Older Adults

Nutrition-related conditions that contribute the most to disability in older adults are heart disease, cancer, stroke, and fracture. In the U.S., eating behavior is a major factor in the development of conditions and diseases that result in 5 out of the 10 leading causes of death - non-insulin dependent diabetes, coronary heart disease, atherosclerosis, stroke, and cancer (Bidlack 1996). Many of the chronic conditions prevalent in older adults are modifiable by dietary changes, including heart disease, diabetes mellitus, hypertension, obesity and osteoporosis. These conditions and diseases may respond to secondary prevention strategies for older adults resulting in decreased incidence or delayed onset. Frequency per 100 older adults in 1996 is shown in Fig. 2 (Administration on Aging 2001).

Fig. 3 shows the percentages of the older population with disabilities by age in 1997 (Administration on Aging 2001) Limitations on activities because of chronic conditions increase with age. In 1998, among those 65 – 74 years, almost 30% reported a limitation caused by a chronic condition, however over 50% of those over 75 years reported they were limited by chronic conditions.

The need for nutrition education interventions for older adults is based on secondary prevention strategies targeted to dietary intake. However, specific dietary recommendations for several nutrients and food components have not been

described for older adults because of a lack of sufficient data for those over 51 years. Currently, the Dietary Reference Intakes (DRIs) are replacing the previous RDAs (Recommended Dietary Allowances) and divide the adult population older than 50 years into two life-stage groups. These groups are those 51 – 70 years and those older than 70 years because the nutrient needs for people 60 or 80 years of age are not the same. The new DRIs will be useful in assessing nutritional needs which are often associated with age-related biological changes and concurrent socioeconomic changes (Millen 2001). Decreased food intake, sedentariness, and reduced expenditure of energy can lead to lower intake of both macro- and micronutrients.

A recent review of national cohort and cross-sectional data described changes in dietary intake with age in the U.S. (Wakimoto & Block 2001). Total energy intake and quantity of food consumed declined substantially with age for both men and women. Between those aged in their 20's and those in their 80's, kcalories declined by 600 – 800 for women and 1000 – 1200 for men. The decline in energy intake resulted in declines in intake of most nutrients. There were potentially important declines with age in median protein, zinc, calcium, and vitamin E intake. However, there is currently little evidence with which to judge the impact of these declines given the lack of data regarding requirements for older adults. There is evidence that the absolute value of certain nutrients increases with age for women (Wakimoto and Block 2001). The intake of vitamin A and C, and potassium were higher for women in their 80's versus those in their 20's. Food pattern data indicate that older people, especially women are more likely to consume fruits and vegetables and there is a high proportion who consume vitamin supplements regularly.

The Healthy Eating Index (HEI) has been used as a summary measure by researchers in the U.S. to assess the overall diet quality for various groups. The HEI is based on conformation with recommendations from the U.S. Department of Agriculture (USDA) Food Guide Pyramid's food groups, and compliance with recommendations for total fat, saturated fat, cholesterol, sodium and dietary variety. Among three groups of older adults, as age increased, overall diet quality scores remained fairly constant (Gaston et al. 1999, Federal Interagency Forum 2000). However, there was a slight, gradual increase in the percentage of older adults with poor scores (Fig. 4). In terms of food groups, the fruit and milk components had the lowest HEI scores. Based on these results, nutrition education strategies should target quantity and nutrient density of foods consumed because of their importance in meeting the recommended number of servings of foods from the five major food groups. Milk consumption in particular is of importance because of the nutrients provided. Elbon et al. (1996) found that milk intake by older adults was related to milk consumption during youth, adherence to a weight loss diet, and attitudes regarding spoilage, packaging and cost.

An important diet-related chronic disease that is the leading cause of death for Americans is heart disease (U.S. DHHS 1999). Strong predictors for absolute coronary disease risk for older adults include levels of total cholesterol, low-density lipoprotein, and high-density lipoprotein cholesterol (Harris et al. 1997). Obesity is associated with cardiovascular risk, as well as a higher incidence of hypertension, hyperlipidemia, diabetes and mortality in both older men and women (Stevens et al. 1998, McCarron and Reusser 1996, Pi-Sunyer 1996, Kannel et al. 1996). The prevalence of obesity in older adults is growing in proportion to other age groups in the U.S. (Jensen & Rogers 1998, Flegal et al. 1998). Several intervention studies to alter diet to prevent heart disease risk included or were targeted to older adults and were reviewed by Chernoff (2001). These studies showed that there is measurable benefit but the question remains as to whether treatment to lower cholesterol is reasonable for elderly individuals. The National Cholesterol Education Program III (NCEP III) targets an estimated 15 million Americans for eligibility for lipid lowering drug therapy combined

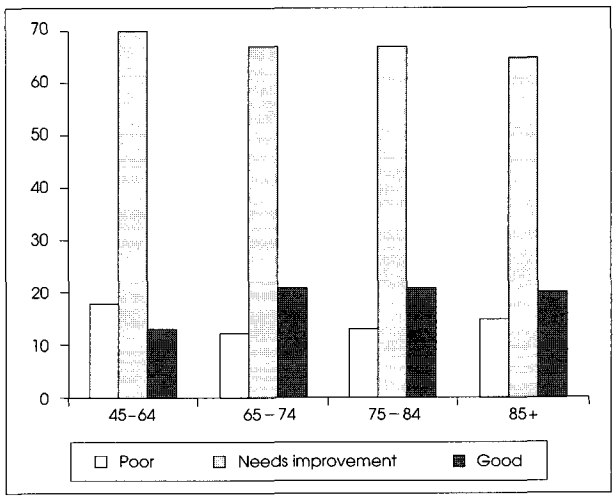

Fig. 4. HEI scores by age, 1999.

with nutrition education (Fedder et al. 2002). Those over 65 years of age represent 27% of those treatment eligible. Based on disease prevalence and benefits expected, the goal of most nutrition education efforts for older adults in the U.S. is to decrease total fat and cholesterol intake, increase fiber and calcium intake and to assure an adequate fruit and vegetable intake (American Dietetic Association 2000).

Effective Nutrition Education for Older Adults

Nutrition education intervention studies with older Americans were reviewed by Contento et al. (1995) to identify elements contributing to effectiveness. Various studies evaluated the effectiveness in settings/channels including congregate meal programs, nutrition education classes, print or broadcast media or clinic-based programs. Interventions typically included a series of nutrition lessons which might address knowledge, identification of motivators and barriers, and eating behaviors. The impact of these interventions were inconsistent, however, effective elements for nutrition education for older adults based on adult education theories emerged from the review. These included 1) use of a personalized approach involving assessment and feedback, 2) use of a behavioral approach, 3) active participation, 4) attention to motivators and reinforcements, 5) use of an empowerment philosophy, 6) identification and targeting of subgroups, and 7) sensitivity to age-related physical and socioeconomic changes such as impaired hearing and eyesight, limited resources, and multiple medical problems.

Food choices made by older adults are dependent on many factors. A group of older adults who lived independently participated in a qualitative study to identify food choice processes (Falk et al. 1996). Important factors influencing food choice included life course events and experiences associated with family roles, beliefs about appropriate food behavior and social structure. Adults considered food choices within social context, and related to sensory perceptions, budget considerations, convenience and physical abilities. Another qualitative study employing focus group interview methodology was conducted with Congregate Meal Program participants (Stewart et al. 1998). In this study, health conditions influenced food choices for the most part and adults made choices according to dietary restrictions. Most wanted information on disease-specific food choices through group discussions and written materials.

Adult education theories call for the use of elements that have previously been found to be effective in nutrition education for older adults, including personalized approaches, active participation, and an empowerment philosophy (Contento et al. 1995). Empowerment suggests that older adults need to be confident in their abilities to perform health behaviors related to diet. The correlation between self-efficacy or confidence and dietary behavior or nutrition attitudes in older adults was examined by Conn (1997), Matheson et al. (1991), and Keith & Schafer (1997). Self efficacy was the strongest predictor for dietary behavior assessed by a 20 item food habits questionnaire in a group of community-dwelling women aged 65 + years (Conn 1997). Self efficacy was also associated with nutrition attitudes, willingness to make dietary changes, and perceived social support in a group of non-institutionalized older adults (Matheson et al. 1991). Keith and Schafer (1997) analyzed data from interviews with younger and older married men and found that while older age predicted likelihood to change dietary patterns dietary efficacy was associated with greater dietary change in both groups.

Social support has been examined for its relationship with dietary intake and health outcomes in older adults in the U.S. (Brunt at al. 1999, Seeman and Crimmins 2001, Murphy et al. 2001). Social support has been defined in several ways and included measures of contact, emotional or instrumental support, presence of a functional network or social relationships. Brunt et al. (1999) showed age differences in the extent to which social support was predictive of at-risk protein or energy intake. Low frequency of contact with others outside of the family or living alone predicted at-risk energy and protein intake, respectively, in the 65 − 74 year old group. A nutrition intervention program using behavior modification techniques as part of a Polyp Prevention Trial (Murphy et al. 2001) resulted in greater diet changes compared to control participants and correlations were observed between a measure of social support and fat, fiber and fruit and vegetable intake.

Behavior modification techniques were also useful in producing and maintaining outcomes of a cognitive-behavioral weight-control intervention implemented in a community-based sample of independent-living, older adults (Dornelas et al. 1998). An intensive 10-week psycho-educational intervention focusing on lifestyle change, followed by a less

intensive 2-year phase focusing on relapse prevention and maintenance of changes resulted in significant decreases in body mass index and glucose level. These positive changes were maintained at the 3-year follow-up.

Taylor-Davis et al. (2000) evaluated the effect of a theory-based series of home-delivered newsletters on knowledge, attitude, and behavior change in older adults. A nutrition communication model and adult learning theory principles were used to guide the development of the newsletters. The intervention had positive effects on nutrition knowledge and interest in nutrition as well as better performance for dietary fiber stage of change and "avoid fat" food behavior. The theory-based newsletters were thought to be valuable in communicating health and nutrition information to older adults.

The Transtheoretical Model has been successfully applied to older adults relative to multiple health behaviors including avoiding fat, eating fiber and losing weight (Nigg et al. 1999) with the interrelationships between various health behaviors increasing with age. Stage distributions were fairly polar for low fat and high fiber changes. Auld et al. (1998) observed a similar distribution for low fat eating behaviors. Results from a cross-sectional survey of older adults in congregate meal programs also showed that many respondents considered themselves to be in either the precontemplation or maintenance stages for healthy eating behaviors (Tucker & Reicks In press). The polarity of the distribution in the stages of change for eating behaviors would indicate that some have been performing these behaviors regularly for a long period of time, while others have not even considered making changes. The idea that older adults are already well-established in their behaviors should be considered when planning and implementing nutrition education interventions with older adults.

Behavioral strategies to reduce fat intake were identified for adults aged 50 years and older by Abusabha et al. (2001). For these adults, the five major fat reduction strategies included increasing summer fruits, increasing vegetables and grains, decreasing recreational foods, decreasing cooking fat, and using fat-modified foods. Nutrition education interventions to reduce fat intake could focus on adoption of strategies typically used by consumers. Consumers today have more opportunities than ever before to access nutrition information quickly and inexpensively and older adults in particular have more time available and interest in improving or maintaining health.

There may be reluctance on the part of health professionals to develop health promotion programs for older adults because it is perceived that they would not be willing to change their lifestyles at this point in their life (Chernoff 2001). In addition, dietetic students among dietetics programs in the U.S. preferred to work with younger compared to older adults and had a low level of knowledge about old age, indicating negative attitudes or misconceptions (Kaempfer et al. 2002). Longitudinal studies reviewed by Chernoff (2001) have shown that health promotion activities contribute to health and extend the number of years of health. The relationship however, weakens in older age. The issue of motivation is important and is related to beliefs that changes in eating behavior are related to better health. Ferrini et al. (1994) examined the association between self-reported behavior change and health beliefs among an educated group of older adults aged 50 to 89 years. Those who agreed that diet and exercise were important for optimal health reported more positive behavior change than those who did not have this attitude. Respondents who reported being confused about how to stay healthy or were not motivated to perform healthful behaviors were less likely to make positive lifestyle changes. These results suggest that the relation between beliefs about health and behaviors does not change with age.

According to the review by Contento et al. (1995), nutrition education needs to be tailored to the needs of specific subgroups within the older population. For example, Bermudez et al. (2000) described the food intake and food sources of macronutrients in diets of older Hispanic adults in the Northeastern U.S. and explored relationships between acculturation, years in the U.S., and macronutrient intake. The cross sectional study of macronutrient intakes showed that Hispanic versus non Hispanic white older adults consumed significantly less saturated fat and simple sugars and more complex carbohydrates. Hispanics residing in the U.S. for a longer time tended to have macronutrient profiles more similar to those of the non-Hispanic whites.

Nutrition education for these Hispanic elders needs to emphasize maintenance or adoption of healthful dietary patterns based on ethnic and modern foods that will satisfy their biological, emotional, and social needs. Another example is a study which identified needs specific to low-income older women (Rainey & Cason 2001). Socio-environmental, personal and behavioral factors affecting the nutritional health

of low income elderly women were identified. It was recommended that nutrition interventions for this group should involve an ecological approach including behavioral and organizational change.

Programs

The Nutrition Program for the Elderly (NPE) (also known as the Congregate Meal Program) helps provide elderly persons with nutritionally sound meals through meals-onwheels programs, or in senior citizen centers and similar congregate feeding settings. Nutrition education is mandated through the program. The NPE is administered by the U.S. Department of Health (DHHS) and Human Service's Administration on Aging, but receives commodity foods and financial support from the USDA's Food and Nutrition Service. Age is the only factor used in determining eligibility. People 60 years of age or older and their spouses are eligible for NPE benefits. There is no income requirement to receive meals under NPE. Each recipient may contribute as much as he or she wishes toward the cost of the meal, but meals are free to those who cannot make any contribution. Under NPE, the USDA provides cash reimbursements and/or commodity foods to State agencies, which pass them on to agencies or organizations that serve meals through DHHS programs. According to the latest participation figures provided by the DHHS, in fiscal year 1996, the participation for this program was 3,022,849. Of this total, 875,093 received benefits through the home delivery system while 2, 147, 756 seniors participated in the congregate meals program. Evaluation results were recently published (Millen et al. 2002) which reported that compared to non-participants, there were consistently higher intakes for the entire range of essential nutrients. NPE meals contributed between 3-% and 50% of total daily nutrition intake. NPE participants experienced more monthly social contacts (17% higher level) than nonparticipants. In addition, 51% of NPE local projects provided various forms of counseling including health counseling.

Other programs include clinic-based programs including the National Nutrition Screening Initiative (Nutrition Screening Initiative 1992). Public health departments, Extension Services, and other health agencies also provide nutrition education through classes and print and broadcast media.

Summary

Principles of adult education theories drive successful nutrition education for older adults. Recommendations that can be incorporated into the lifestyle of the older adult contribute to a reasonable level of compliance. Older adults can modify their diets with appropriate explanation and instruction. The proposed changes need to be perceived as necessary to improve or maintain health. If an older adult is included in the assessment process, setting priorities, and engaged the feedback process, the likelihood of achieving the desired goals will be enhanced.

Principles of adult learning support the need for 1) relevance to lifestyle and to health needs (explanations need to be related to the individual's experience), 2) an appropriate language level (also consideration for eyesight and hearing issues), and 3) a rationale that is compelling enough to motivate and maintain dietary changes. Improvement in health status can serve as positive reinforcement so that changes are maintained. Research also supports consideration of concepts from commonly used behavior change theories and models including self-efficacy, social support and readiness to change. In addition, tailoring nutrition education for older adults is needed based on characteristics or needs of specific audiences.

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