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An Exploratory Study of Attitudes, Beliefs and Practices Related to the Interim Dietary Guidelines for Reducing Cancer in the Elderly

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ABSTRACT. In this pilot study, a self-administered questionnaire was used to assess the health attitudes, beliefs and practices related to each of the Interim Dietary Guidelines for Reducing Cancer Risk (I.D.G.R.C.R.) in a convenience sample of elderly Caucasian subjects ($N = 30$) over 60 years old. The questionnaire items included personal efficacy, perceived motivators and barriers, and current practices related to the compliance of each of the dietary guidelines. The distributions of responses to the questionnaire items show variations in the subjects' attitudes, beliefs and current dietary practices related to each of the dietary guidelines. Most subjects reported current practice of most guidelines except the guideline of a low fat diet. Most of the time, the subjects perceived one or more motiva-

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tions to comply with the guidelines of eating fruits and vegetables high in vitamin C, and eating dark green or deep yellow vegetables. Taste and health benefits were shown to be important factors among motivators influencing the compliance to the dietary guidelines. The findings of this exploratory study have direct implications for planning nutrition intervention programs for cancer risk reduction in the elderly.

INTRODUCTION

The elderly are the fastest growing segment of the American population. The U.S. Bureau of Census (1982) estimates that the 65 and over age group will increase 4.5 times by the middle of the twenty-first century. One of the concerns regarding this segment of population is their increasing risk for cancer. Cancer is one of the leading causes of death among the elderly in the U. S. (Cancer Statistics, 1990). Epidemiological studies as well as animal studies have indicated a relationship between dietary factors and cancer risk (Doll and Peto, 1981; Reddy, 1989). The National Cancer Institute has recommended dietary modification as one of the preventive methods for achieving a nation-wide 50% reduction in cancer mortality by the year 2000 (N.C.I., 1988). The Interim Dietary Guidelines for Reducing Cancer Risk (IDGRCR) were developed by the National Academy of Sciences, Committee on Diet, Nutrition and Cancer in 1982 as a set of recommendations for the general public (National Academy of Sciences, 1982). These guidelines are consistent with the principal guidelines for chronic disease reduction recommended recently by the National Research Council (1989) and the Surgeon General's report on nutrition and health (1988).

Successful cancer risk reduction intervention for the elderly requires an understanding of the interrelationships among factors influencing health behaviors. The extent of awareness, understanding, and compliance with respect to the dietary guidelines among the elderly needs to be investigated in order to plan and implement effective nutrition interventions for the target population. The Dietary Modification for Cancer Prevention Questionnaire was developed to assess health attitudes, beliefs and behaviors related to each of the dietary guidelines which had been adapted from the I.D.G.R.C.R. (Palmer S. and Bakshi K., 1983). The purpose of

this pilot study was to use a self-administered questionnaire in a convenience sample of the elderly population to investigate the distribution and variations of their responses to the question items on attitudes, beliefs and practices related to each of the dietary guidelines. The findings will provide direct implications for planning nutrition interventions for cancer risk reduction for the elderly.

METHOD

Questionnaire Development

The dietary guidelines on the Dietary Modification For Cancer Prevention Questionnaire were adapted from the I.D.G.R.C.R. as shown in Table 1. The development of this questionnaire was based on the variables in a Health Behavior for Cancer Prevention Model (Atwood, 1985). The variables included personal efficacy (anticipated success and willingness to follow dietary guidelines), perceived benefits and barriers in following the dietary guidelines (taste, convenience, cost, aiding indigestion, good/bad for health, influence of family or friends, food-related colon cancer risk), current and past dietary practices. Nine analogous questionnaire items based on these variables were developed to assess attitudes and beliefs regarding each of the dietary guideline. Figure 1 represents an example of the questionnaire relating to the recommendation of a low fat diet. Current dietary practices related to each dietary guideline were treated in the last section of the questionnaire.

Sample Population

A convenience sample of thirty paid volunteers were recruited from an elderly trailer park in Tucson, Arizona. All respondents (50% male, 50% female) were Caucasians older than 60 years. All were from lower-middle socioeconomic strata and were retired from employment at the time of the study. Each respondent was asked to self-administer an 8-page, multiple choice questionnaire. Analysis of the data was based on the 30 completed questionnaires.

Table 1: Interim Dietary Guidelines to Lower Cancer Risk *

Reduce intake of both saturated and unsaturated fats from 40% to approximately 30% of total calories.

Include fruits, vegetables, and whole-grain cereal products in daily diet; especially citrus fruits, dark green, and deep yellow vegetables, and carotene rich and cruciferous vegetables. Avoid high doses of dietary supplements.

Minimize consumption of cured, pickled, and smoked foods.

Use alcohol only in moderation

* Recommended by the National Academy of Sciences, Committee on Diet, Nutrition, and Cancer (1982), and adapted from Palmer (1983).

Figure 1 An Example of the Questionnaire Using the Recommendation of a Low Fat Diet

I. RECOMMENDATION: REDUCE THE TOTAL FAT IN YOUR DIET

Examples:	trim fat from meats	use lowfat salad dressings
	remove skin from poultry	use less margarine or butter
	use lowfat dairy products	use cheese/peanut butter
	bake or broil meats instead of frying	sparingly

FOR ME, REDUCING THE FAT IN MY DIET TO 30% OF MY TOTAL CALORIES...

(Circle one response for each letter below.)

- a) 1 - would be unappetizing
 2 - would be appetizing
 3 - neither
 4 - don't know
- b) 1 - would be inconvenient
 2 - would be convenient
 3 - neither
 4 - don't know
- c) 1 - would be too expensive
 2 - would be low in cost
 3 - neither
 4 - don't know

FIGURE 1 (continued)

- d) 1 - would probably cause digestive problems
 2 - would probably aid my digestion or bowel function
 3 - would not affect my digestion or bowel function
 4 - don't know
- e) 1 - would be difficult due to influence of family/friends
 2 - would be easier due to influence of family/friends
 3 - no effect
 4 - don't know
- f) 1 - would be bad for my health
 2 - would be good for my health
 3 - would not affect my health either way
 4 - don't know
- g) 1 - would increase my chances of getting bowel cancer
 2 - would reduce my chances of getting bowel cancer
 3 - would not affect my chances of getting bowel cancer
 4 - don't know

	Yes	Probably Yes	Not Sure	No	Probably No
h) Do you think you <u>could</u> reduce fat intake 30%?	1	2	3	4	5
i) Do you <u>want</u> to reduce fat intake 30%?	1	2	3	4	5

YOUR COMMENTS

Data Analysis

The frequency of distribution of responses to the questionnaire items were calculated in the following manner. The frequency distribution (Figure 2) of the sample population's anticipated success and willingness to follow each of the dietary guidelines was determined by combining the percent of favorable responses, "yes" and "probably yes," to questions on each of the seven dietary guidelines. The mean percent for each perceived motivating factor to following the dietary guidelines (Figure 3) was determined by obtaining the mean frequency of subjects' positive response to a particular motivator factor for the seven dietary guidelines (i.e., the mean percent of 83.3 for "taste" as a perceived motivator represents the average of the percentages of subject responses identifying "taste" as a motivator for compliance to all of the seven dietary guidelines). The same procedure was applied when calculating the mean percent frequency of all subjects' non-committed responses to each perceived motivator factor for following the dietary guidelines (Figure 5).

Figure 4 represents the mean frequency distribution of the subjects' favorable responses to the collective perceived motivators affecting adherence to each of the dietary guidelines (i.e., the mean percent of 73.3 for "Vitamin C vegetables and fruits" represents the frequency distribution of subjects positively identifying each of the seven motivators to adherence to Vitamin C fruit and vegetable intake). The same procedure was applied when calculating the mean frequency of all subjects' non-committed responses to each perceived motivator factor for following the dietary guidelines (Figure 6).

RESULTS

Personal efficacy and current practices related to the compliance of each of the dietary guidelines.

Figure 2 summarizes the personal efficacy (anticipated success and willingness to follow the dietary guidelines) related to each of the dietary guidelines. When respondents were asked if they could follow the guidelines, seventy percent or higher anticipated success

Figure 2: Personal Efficacy and Current Practices Related to the Dietary Guidelines

in following each of the guidelines. In comparison, the willingness to comply with the guidelines was lower. However, all the respondents (100%) anticipated success and willingness to follow the recommendation of moderate use of alcohol.

Above 90% agreement between anticipated success and willingness to follow the guideline within individuals were found in the following guidelines: moderate use of alcohol (100%), eat dark green or deep yellow vegetables daily (96.7%), eat fruits and vegetables high in vitamin C (93.3%). Lower percent of agreement between anticipated success and willingness to follow the guideline within individuals were found in the guidelines of eat whole grain daily (83.3%), eat cruciferous vegetables (83.3%), limit smoked or cured products (76.7%) and low fat diet (73.3%).

The distribution of reported current practices showed variations among the seven dietary guidelines. A majority of the respondents reported following these recommended guidelines currently: moderate alcohol use, limit use of smoked and cured foods, fruits and vegetables high in vitamin C, and whole grain products. About half of the sample population reported the recommended consumption of cruciferous vegetables; but only 36.7% reported following a low fat diet. A relatively higher prevalence in following the guidelines for two or more years was reported for the following guidelines: eat fruits and vegetables high in vitamin C daily, limit use of smoked or cured foods, and moderate use of alcohol. A lower prevalence was reported for the rest of the guidelines.

Perceived Motivators and Barriers to the Compliance of Each of the Dietary Guidelines

Figure 3 presents the frequency distribution of each perceived motivator for following the dietary guidelines. Important motivating factors in the compliance of the dietary guidelines identified by the subjects were: appetizing, good for health, aid in digestion and bowel function, and convenience. On the average, about 50% of the time, the subjects identified the benefits of decreasing risk for bowel cancer by following the dietary guidelines. The two motivators, receiving positive influence from family and friends and low cost were not perceived as important motivators compared to the

Figure 3: Frequency Distribution of Each Perceived Motivator for Following the Dietary Guidelines

other motivating factors. Figure 4 shows the frequency distribution of perceived motivators for following each dietary guideline. More than half of the time subjects perceived being motivated to comply with the following dietary guidelines: eat fruits and vegetables high in vitamin C daily, eat dark green and deep yellow vegetables daily, eat whole grain daily, and eat cruciferous vegetables. Less frequently the subjects perceived being motivated to follow the guidelines of a low fat diet and limiting smoked or cured foods. Only rarely did the subjects perceive being motivated to follow the guideline of moderate use of alcohol.

Figure 5 shows the frequency distribution of non-committed or neutral responses (perceived as being neither a motivator nor a barrier to comply with the dietary guidelines) to each motivating factor for following the dietary guidelines. More than half of the time subjects reported neutral responses to the influence of cost and social environment and the support of family and friends. Other factors such as taste, convenience, health benefits, and the effect on the risk of bowel cancer were sometimes perceived neither as motivators or barriers to the compliance of the dietary guidelines by the subjects. Figure 6 shows the frequency distribution of non-committed responses to motivator factor for following each dietary guideline. On the average, the non-committed responses were reported over 50% of the time in the following guidelines: moderate use of alcohol and limit the use of smoked or cured foods.

For the first five recommended dietary guidelines (low fat diet, whole grain products, dark green vegetables, fruits and vegetables high in vitamin C, and the cruciferous vegetables), similar patterns of responses were found in the distribution of perceived benefits and neutral (positive and neutral) responses related to the compliance of the dietary guidelines. About one half of the subjects perceived being motivated by two or more factors and about one third of the subjects reported two or more non-committed responses to the first five guidelines. Only a few subjects perceived having two or more barriers in following these guidelines. For the sixth and seventh recommended guidelines (limit cured or smoked foods, moderate use of alcohol), about one half of the subjects perceived being motivated by two or more factors in following the guidelines; while about one quarter perceived having two or more barriers to

Figure 4: Frequency Distribution of Perceived Motivators for Following Each Dietary Guideline

Figure 5 Frequency Distribution of Noncommitted Responses to Each Motivator Factor for Following the Dietary Guidelines

Figure 6: Frequency Distribution of Noncommitted Responses to Motivator Factor for Following Each Dietary Guideline

following these guidelines. The majority reported more than two non-committed responses about following these two guidelines.

DISCUSSION

There were notable variations in the responses regarding the attitudes, beliefs and practices related to the dietary guidelines in this exploratory study. A majority of the subjects anticipated success in following each of the dietary guidelines, but they were less frequently willing to follow the guidelines for consumption of low fat diet, whole grain cereals and cruciferous vegetables. This reluctance corresponds with lower frequency of current adherence to these guidelines. Their unwillingness to follow these guidelines might be due to their anticipated difficulties to change long-established eating habits and food preferences. Their current dietary intake patterns are in agreement with the usual food consumption patterns of the elderly as reported by Fanelli and Stevenhagen (1985). In examining the usual food consumption pattern among older Americans interviewed during 1977-1978, the results showed high fat food items such as whole milk, eggs, bacon, cheese, butter, and luncheon meat were frequently consumed by elderly of both sexes 65-75 years old. White bread was found to be most frequently consumed. White bread and refined cereals were preferred over whole wheat bread and whole grain cereal. Vegetables frequently consumed were lettuce, potatoes and tomatoes; cruciferous vegetables were not ranked as the 30 most often consumed items in their study.

The recommendation for the moderate use of alcohol was the only one in which all the participants showed both anticipated success and willingness to comply; this high percent of agreement between anticipated success and willingness to comply with this guideline corresponds to the high frequency of reported current compliance, and may also reflect the reluctance to admit to immoderate drinking, as well as variations in interpretation of the word "moderate."

A majority of the subjects reported current practices of all the dietary guidelines except the guideline of low fat diet. This finding is not consistent with the findings of Patterson and Block (1988). They used the twenty-four dietary recall data from the second Na-

tional Health and Nutrition Examination Survey (NHANES II) to examine the consumption of food groups related to the Interim Dietary Guidelines. Their results showed the percent of subjects (white, ages 55-74) who reported consuming the following food groups on the recall days were low: cruciferous vegetables (20%), fruits and vegetables high in vitamin A (25%), fruits and vegetables high in vitamin C (34%), and high fiber cereals (24%). The high percent of subjects reporting current practices of the dietary guidelines in our study may be due to the selection in reporting biases of our volunteer subjects.

The small proportion of the subjects reporting current practice of low fat diet might be due to several reasons. One third of the subjects perceived no motivators or barriers to a low fat diet, believed that a low fat diet would decrease the risk of bowel cancer, and did not know whether they were following a low fat diet. Education efforts are indicated to increase the knowledge of dietary fat intake and related cancer risk, the food sources of fat, and the planning and preparation of low fat meals.

Most of the time subjects perceived being motivated to follow the guidelines of eating dark green or deep yellow vegetables daily and eating fruits and vegetables high in vitamin C. Good taste and health benefits which included aiding bowel problems were often considered motivators to the compliance of the dietary guidelines. Similar findings on the importance of taste as a motivator to food choices have been reported by Briley (1989) and Bidlack et al. (1986). Findings on the belief of health benefits as determinants of food consumption have been reported by Grotkowski and Sims (1978). Their results showed that food selection is related to elderly subjects' beliefs concerning health, the elderly were often found to associate a food item with a belief that it has a specific health benefit. Nutrition education messages specific to health benefits and good taste of low fat and high fiber foods might be effective in achieving attitudinal and dietary behavior changes in this target group. Convenience as a motivator to the compliance of the Interim guideline was perceived by the subjects half of the time, a less frequently identified motivator compared to the motivators such as taste and health benefits. This finding is supported by the findings of Fanelli and Abernethy (1986) which showed the elderly subject's

food selection was associated with nutrition knowledge and beliefs about health benefits more than to convenience. The concept of convenience foods and the ease of home preparation has been reported by Krongl (1982) to be less relevant among the elderly who showed more willingness to spend time in cooking, because they believed in quality of foods. However convenience would be an important factor when the elderly become physically unable to prepare the meals.

The social support environment, the influence of family members and friends was not indicated to be a strong factor influencing the compliance of the dietary guidelines. This might be due to the fact that some of the elderly subjects might be widows or widowers and are living alone without frequent social contacts. Many elderly have changed their food consumption pattern due to their economic constraints. Ingwersen and Hama (1985) reported that adequate nutrient intake in the elderly was associated with income; the influence of income on food choices was one of the important determinants of inadequate nutrient intake in the elderly. However, in our study cost was shown to be a relatively less important factor in influencing the compliance with the guidelines compared to other factors.

In summary, variations of reported attitudes, beliefs and practices related to compliance with each of the dietary guideline were observed in this exploratory study. These patterns of variation suggest that the recommended dietary guidelines represent different parameters for nutrition interventions. Though the use of a small convenience sample limits the generalizability of the results, the findings provide better understanding of the factors influencing the compliance behavior of the guidelines in this sample population, and therefore have direct implications for planning nutrition interventions in elderly populations similar to this study population. Further studies should be done in using elderly subjects from diverse demographic populations. Studies to investigate other factors influencing the compliance to the dietary guidelines among the elderly such as physiological, psychological and sociological factors also remain to be studied.

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