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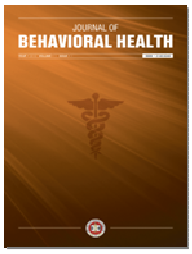

Original Research

Perception of nut intake among individuals with or at risk for heart disease and/or diabetes

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Abstract

Background: Intake of tree nuts and peanuts is associated with reduced risk of cardiovascular disease (CVD) and diabetes. However, no studies have been published on beliefs, attitude, perceived barriers and benefits, and knowledge regarding tree nuts and peanuts among individuals with or at risk for these conditions.
Methods: The objective of this study was to assess the beliefs, attitude, perceived barriers and benefits, and knowledge regarding tree nuts and peanuts intake among 85 Caucasian and African Americans (mean age 63 years) individuals with or at risk for CVD and/or diabetes. A survey questionnaire was utilized to collect date from to healthcare facilities in a small town in southeastern United States.
Results: About 32% were unaware of the hypocholesterolemic effects of nuts and an additional 21% disagreed that nuts exhibit such effects. Fifty-three percent agreed or strongly agreed that eating tree nuts and peanuts would help them to be healthier. Most participants (63%) strongly agreed or agreed with the statement, "I would eat nuts on most days of a week if my doctor recommended me to do so." About one-third of the participants strongly agreed, agreed, or neither agreed/disagreed with the statement, "I should not eat nuts on most days of the week because I would gain weight." The majority of participants answered all five knowledge questions concerning the nutrient content of tree nuts and peanuts incorrectly
Conclusions: The results indicate that the beliefs and knowledge of individuals with or at risk for CVD and/or diabetes are largely inconsistent with the scientific findings. The results also indicate that the best way to change attitude, perceived barriers and benefits could be accomplished by physicians.

BACKGROUND

Past epidemiological and interventional studies indicated that both tree nuts and peanuts lower the risk of cardiovascular diseases (CVD) and diabetes. For example, results from the Nurses' Health Study revealed that women who consumed one ounce of nuts more than five times per week decreased the risk for fatal coronary heart disease (CHD) by 39%, non-fatal myocardial infarction risk by 32%, total CHD risk by 35%, and diabetes risk by 57%, in comparison to those who consumed one ounce of nuts less than once a month [1]. Nuts have also been found to improve both blood lipid and serum glucose profiles [2-8].

The beneficial impact of nuts is likely attributed to their nutritional profile. Most nuts are a good source of protein, monounsaturated fatty acids, micronutrients such as vitamin E and magnesium, phytochemicals and dietary fiber. Nuts are also relatively low in saturated fatty acids and contain no trans fatty acids or cholesterol [2,9].

Only one published study has assessed beliefs, attitudes, perceived barriers and benefits, and

knowledge of health benefits of tree nuts and peanuts intake [10]. The degree of awareness of health benefits of tree nuts and peanuts is unclear among people with or at risk for CVD and/or diabetes. It is also unknown what other perceived beliefs, barriers, or attitudes towards eating tree nuts and peanuts exist among this population. Therefore, the goal of this research was to assess the beliefs, attitudes, knowledge, perceived barriers and benefits of individuals with or at risk of developing diabetes and/or CVD regarding intake of tree nuts and peanuts.

METHODS

The study was approved by the University and Medical Center Institutional Review Board at (blinded) University. A survey was adopted and modified from Pawlak and colleagues [10]. A detailed description of the survey development has been described previously [10]. The data were collected between May 2011 and August 2011. Participants included patients at one heart hospital and one cardiac rehabilitation clinic located in a small town in southeastern U.S. Criteria of inclusion included African American and Caucasian men and women 40 years and older. People in this age group are at an increased risk for cardiovascular disease and diabetes [11]. Data analysis was completed in the fall of 2011.

RESULTS

Fifteen out of 100 collected surveys were excluded due to not meeting either the age or the ethnic background inclusion criteria. The mean age of the 85 participants was 63 years (ranged from 41 to 89 years). Participants' gender was evenly distributed, 51.8% males and 48.2% females. The majority of the participants were Caucasian (77.6%), while the remaining 22.4% were African Americans. Eighty-three percent of participants indicated that they were previously diagnosed with at least one of the following: heart disease, heart attack, angina, stroke, hypertension, high cholesterol, or diabetes. These individuals were between 50 to 60 years of age at the time of diagnoses.

Survey results

Beliefs

About 32% of the participants were unaware of the hypocholesterolemic effect of nuts and an additional 21% disagreed that nuts exhibit such effect. Slightly more than one-third of respondents were unaware that frequent tree nuts and peanuts intake decreases the risk for heart attacks and 17% disagreed that nuts could decrease such a risk. Approximately 42% of the respondents were unaware of the beneficial effects nuts have on diabetes. Also, 87% of the participants agreed or strongly agreed with a statement *"Eating nuts will cause weight gain."*

Benefits

Twenty-seven percent of participants strongly agreed or agreed that eating tree nuts and/or peanuts was consistent with the advice of their doctor. Approximately 63% of participants indicated they strongly agreed or agreed with the statement, "*I would eat nuts on most days of a week if my doctor recommended me to do so"* (see Table 1). Also, 53% agreed or strongly agreed that eating tree nuts and peanuts would help them to be healthier.

Barriers

About one-third of the participants strongly agreed, agreed, or neither agreed/disagreed with the statement, "*I should not eat nuts on most days of the week because I would gain weight."* One-third of participants were unaware that nuts were a good source of omega-3 fat and about half of participants were aware that eating nuts could help with increasing fiber consumption.

Knowledge

The majority of participants answered all five knowledge questions concerning the nutrient content of tree nuts and peanuts incorrectly, except for the questions:*"Peanuts and walnuts are considered a good source of which of the following fats?"* Almost 66% of participants were aware that peanuts and walnuts were a good source of omega-3 fatty acids and half of the participant indicated that they should eat nuts because of they are a source of this nutrient. A statement regarding the predominant source of fat in walnut received the lowest correct score (5.9%). A little over 14% of respondent correctly answered a statement: "nuts such as almonds, pecans, macadamia nuts, cashews and/or hazelnuts contain mainly which of the following type of fat. Statements: "which of the following nuts have the highest content of omega-3fatty acids?" and "which of the following nuts have the highest content of selenium?" received 25.9% and 22.4% correct answers, respectively.

Attitude

Almost half of the participants strongly agreed with two attitudinal statements: *"I should eat nuts on most days of a week because nuts are healthy"* and *"I should eat nuts on most days of a week because nuts are high in nutrients."* In addition, about one quarter of the participants agreed with these statements.

Intake

Approximately 55% of the participants consumed nuts one to two times per week. Less than 6% of participants have not consumed any nuts. All other respondents consumed nuts less frequently.

Table 1. Distribution of benefit and barrier statements of tree nuts and peanuts intake.

Benefits and barrier statements	Strongly Agree	Agree	Neit her	Dis agree	Strongly Disagree	Missing
	(%)	(%)	(%)	(%)	(%)	(%)
Benefits						
Eating nuts on most day of a week would help me feel better	12,9	16,5	47,1	12,9	9,4	1,2
Eating nuts on most days of a week would help me to take better care of my body	20	23,5	36,5	9,4	9,4	1,2
Eating nuts on most days of a week would help me get more nutrients	24,7	29,4	30,6	8,2	4,7	2,4
Eating nuts on most days of a week would help me be healthier	25,9	27,1	32,9	7,1	5,9	1,2
Eating nuts on most days of a week would give me the energy I need	14,1	29,4	40	7,1	5,9	3,5
Eating nuts on most days of a week would help me to eat more fiber	29,4	27,1	29,4	7,1	3,5	3,5
Eating nuts on most days of a week would help me to look young	2,4	9,4	26,2	38,1	23,8	0
Eating nuts on most days of a week would be consistent with the advice of my doctor	15,3	11,8	42,4	12,9	15,3	2,4
I would eat nuts on most days of a week if my doctor recommended me to do so	43,5	20	22,4	2,4	9,4	2,4
Eating nuts on most days of a week would cost me too much money	8,2	16,5	27,1	23,5	23,5	1,2
Eating nuts on most days of a week would cause me to eat too much fat	12,9	11,8	20	30,6	22,4	2,4
Eating nuts on most days of a week would cause me to eat too many calories	20	12,9	17,6	25,9	20	3,5
I would eat nuts on most days of a week if they were available in grocery stores where I go shopping	17,6	10,6	29,4	16,5	22,4	3,5
I would eat nuts on most days of a week if they were affordable	23,5	20	27,1	9,4	17,6	2,4
I would eat nuts on most days of a week if they had more flavor	8,2	7,1	27,1	27,1	25,9	4,7
I would eat nuts on most days of a week if they were lower in fat	22,4	11,8	23,5	17,6	21,2	3,5
I would eat nuts on most days of a week if they were lower in calories	25,9	11,8	27,1	14,1	18,8	2,4

DISCUSSION

A number of studies have shown that frequent tree nuts and peanuts intake can decrease the risk of chronic disease development [1,4,12]. Tree nuts and peanuts may also be beneficial for people who already developed these conditions. Unfortunately, no studies have been conducted to date that assessed individuals' beliefs, attitudes, perceived barriers and benefits, and knowledge among people with or at risk for developing these health conditions. Thus, the goal of this study was to fill this gap.

Results of the current research revealed that the awareness of the nutritional content and health benefits of frequent tree nuts and peanuts consumption, for the most part, was inadequate. Similar results were found in a study conducted with WIC participants [10].

The results also indicate that physicians may be the most instrumental not only in increasing the knowledge but also compliance with the guidelines to consume tree nuts and peanuts on most days of the week. This is consistent with other research that indicated the willingness of people in following physicians' recommendations [13]. However, although the majority

of participants indicated they would consume nuts on most days of the week if their doctor recommended them to do so, only one-fourth of them agreed that eating nuts was consistent with the advice of their doctor. This may indicate that few physicians communicate the benefits of eating nuts to their patients. It is uncertain the extent of awareness among physicians regarding the effects of nuts on CVD and diabetes. These results may indicate that increasing patients' awareness of the benefits of tree nuts and peanuts should begin with increasing such awareness among doctors.

The current study was based on a small sample size (n = 85) and included only Caucasian and African American participants. Additional larger studies need to be conducted to validate or refute our findings.

Our results showed that the current scientific evidence of the health benefits of eating tree nuts and peanuts is not being conveyed to individuals with or at risk of CVD and/or diabetes. Education regarding health benefits of nuts provided by physicians and other healthcare professionals may help reduce the number of CVD and diabetes incidences and mortalities.

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