Nuts and Health—What's the Latest?

Maureen Ternus, M.S., R.D.
International Tree Nut Council
Nutrition Research & Education Foundation

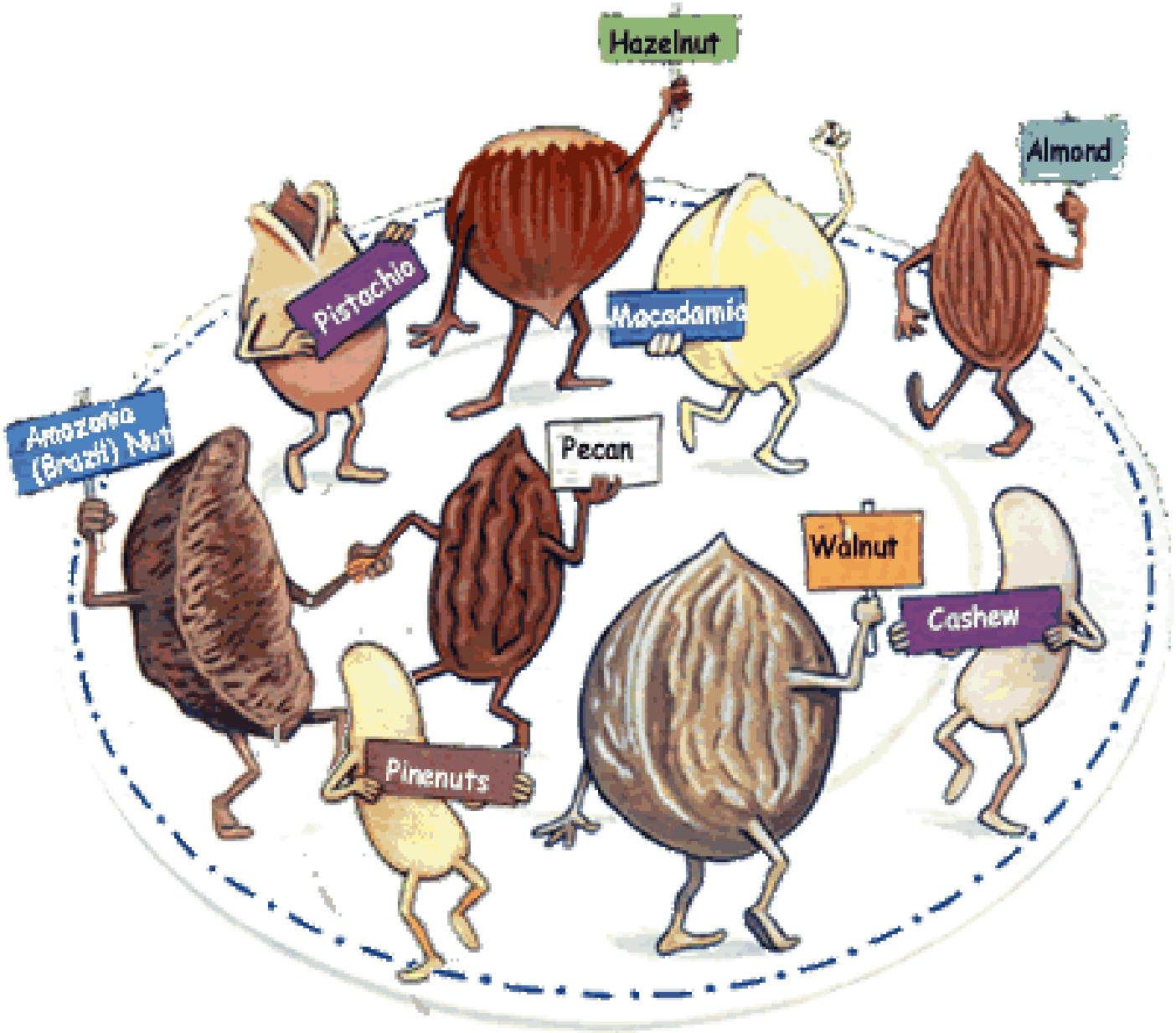
NPSA National Pecan Shellers Association

NutHealth.org

International Nut and Dried Fruit Foundation

- Headquartered in Reus, Spain and represents 9 different tree nuts
- Represents the tree nut industry worldwide, with production in more than 40 countries and consumption in more than 100 countries

NutHealth.org



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In 1993 the International Tree Nut Council Nutrition Research & Education Foundation was formed to try to reverse the bad image of nuts…

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INC NREF Contributors

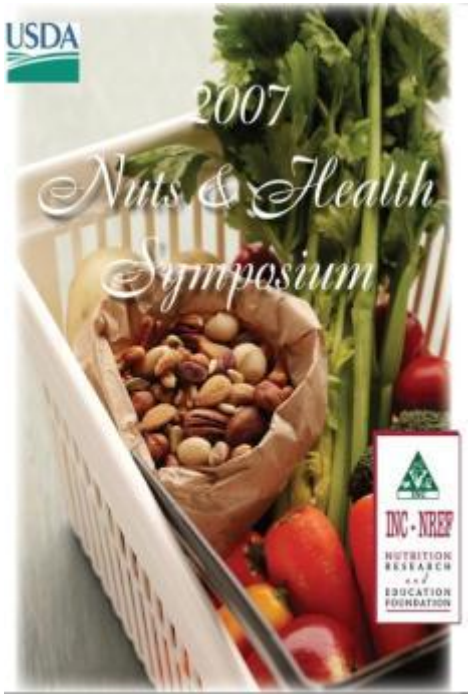
Almond Board of California
American Pistachio Growers
American Black Walnut Marketing Board
Agricultural Commodity Commission for Pecans (GA)*
AZ Pecan Growers Association
California Walnut Commission
Hazelnut Marketing Board
INC
National Pecan Shellers Association
Paramount Farms, Inc.
Texas Pecan Growers Association
Western Pecan Growers Association

Nuts Have Come a Long Way…

1995 Presidio Meeting

USDA

2003 Qualified Health Claim for Nuts



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RESEARCH PRIORITIES

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Topics to be Covered:

- INC-NREF funded research
- Current/future projects
- Allergies
- Social Media

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INC NREF-Funded Research

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Nuts and Cancer Studies

Researchers at Harvard and Dana-Farber Cancer Institute are conducting four different analyses looking at nuts and:

- pancreatic cancer
- colorectal cancer and adenoma
- prostate cancer
- total cancer

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FULL PAPER

BJC

British Journal of Cancer (2013), 1–6 | doi: 10.1038/bjc.2013.665

Keywords: nut consumption; pancreatic cancer; prospective cohort study

Nut consumption and risk of pancreatic cancer in women

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Background: Increasing nut intake has been associated with reduced risk of diabetes mellitus, which is a risk factor for pancreatic cancer.

Methods: We prospectively followed 75 680 women in the Nurses' Health Study, and examined the association between nut consumption and pancreatic cancer risk. Participants with a previous history of cancer were excluded. Nut consumption was assessed at baseline and updated every 2 to 4 years. Relative risks (RRs) and 95% confidence intervals (95% CIs) were estimated using Cox proportional hazards models.

Results: We documented 466 incident cases of pancreatic cancer. After adjusting for age, height, smoking, physical activity, and total energy intake, women who consumed a 28-g (1 oz) serving size of nuts ⩾2 times per week experienced a significantly lower risk of pancreatic cancer (RR, 0.65; 95% CI, 0.47–0.92; *P* for trend = 0.007) when compared with those who largely abstained from nuts. The results did not appreciably change after further adjustment for body mass index (BMI) and history of diabetes mellitus (RR, 0.68; 95% CI, 0.48–0.95; *P* for trend = 0.01). The inverse association persisted within strata defined by BMI, physical activity, smoking, and intakes of red meat, fruits, and vegetables.

Conclusion: Frequent nut consumption is inversely associated with risk of pancreatic cancer in this large prospective cohort of women, independent of other potential risk factors for pancreatic cancer.

Pancreatic cancer is among the most fatal malignancies, representing the fourth most common cause for cancer-related mortality in the United States (Jemal *et al*, 2010). Primary prevention remains the most feasible approach to reducing the incidence of pancreatic cancer, which makes the identification of modifiable risk factors essential. Unfortunately, very few modifiable risk factors have been identified. The 2009 World Cancer Research Fund/American Institute for Cancer Research (WCRF/AICR) report concluded that, beyond cigarette smoking, body fatness was the only convincing modifiable risk factor for pancreatic cancer (WCRF/AICR, 2009).

Extensive evidence suggests that common states of insulin resistance such as obesity (Larsson *et al*, 2007) are associated with an increased risk of pancreatic cancer – possibly mediated through chronic hyperglycaemia and hyperinsulinaemia. Type II diabetes mellitus, a potential consequence of pancreatic cancer, is also a risk factor for this fatal disease (Everhart and Wright, 1995; Elena *et al*, 2013). Recent studies demonstrate that elevated baseline plasma insulin and C-peptide significantly increased subsequent pancreatic cancer risk (Stolzenberg-Solomon *et al*, 2005; Michaud *et al*, 2007). Nuts are a rich source of bioactive components such as unsaturated fatty acids, fibre, and magnesium (Brufau *et al*, 2006), which may improve insulin sensitivity (Anderson *et al*, 1987; Paolisso *et al*, 1989; Riserus *et al*, 2009). Data from the National Health and Nutrition Examination Survey (NHANES) found that nut consumption was associated with decreased insulin levels

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Received 10 July 2013; revised 24 September 2013; accepted 2 October 2013

Nuts and Pancreatic Cancer

Results: Women who consumed a one-ounce serving of nuts, two or more times per week, had a significantly reduced risk of pancreatic cancer.

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Nuts and Pancreatic Cancer Media Results

- Online placements totaled over 3 million impressions
- Print placements to date are over 1.5 million in circulation
- The study appeared in media reports in 8 countries: U.S., Australia, Canada, India, New Delhi, New Zealand, Pakistan and the United Kingdom.

NutHealth.org

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Association of Nut Consumption with Total and Cause-Specific Mortality

Ying Bao, M.D., Sc.D., Jiali Han, Ph.D., Frank B. Hu, M.D., Ph.D., Edward L. Giovannucci, M.D., Sc.D., Meir J. Stampfer, M.D., Dr.P.H., Walter C. Willett, M.D., Dr.P.H., and Charles S. Fuchs, M.D., M.P.H.

ABSTRACT

BACKGROUND

Increased nut consumption has been associated with a reduced risk of major chronic diseases, including cardiovascular disease and type 2 diabetes mellitus. However, the association between nut consumption and mortality remains unclear.

METHODS

We examined the association between nut consumption and subsequent total and cause-specific mortality among 76,464 women in the Nurses' Health Study (1980–2010) and 42,498 men in the Health Professionals Follow-up Study (1986–2010). Participants with a history of cancer, heart disease, or stroke were excluded. Nut consumption was assessed at baseline and updated every 2 to 4 years.

RESULTS

During 3,038,853 person-years of follow-up, 16,200 women and 11,229 men died. Nut consumption was inversely associated with total mortality among both women and men, after adjustment for other known or suspected risk factors. The pooled multivariate hazard ratios for death among participants who ate nuts, as compared with those who did not, were 0.93 (95% confidence interval [CI], 0.90 to 0.96) for the consumption of nuts less than once per week, 0.89 (95% CI, 0.86 to 0.93) for once per week, 0.87 (95% CI, 0.83 to 0.90) for two to four times per week, 0.85 (95% CI, 0.79 to 0.91) for five or six times per week, and 0.80 (95% CI, 0.73 to 0.86) for seven or more times per week ($P<0.001$ for trend). Significant inverse associations were also observed between nut consumption and deaths due to cancer, heart disease, and respiratory disease.

CONCLUSIONS

In two large, independent cohorts of nurses and other health professionals, the frequency of nut consumption was inversely associated with total and cause-specific mortality, independently of other predictors of death. (Funded by the National Institutes of Health and the International Tree Nut Council Nutrition Research and Education Foundation.)

From the Channing Division of Network Medicine, Department of Medicine, Brigham and Women's Hospital and Harvard Medical School (Y.B., F.B.H., E.L.G., M.J.S., W.C.W., C.S.F.), the Departments of Epidemiology (F.B.H., E.L.G., M.J.S., W.C.W.) and Nutrition (F.B.H., E.L.G., M.J.S., W.C.W.), Harvard School of Public Health, and the Department of Medical Oncology, Dana–Farber Cancer Institute (C.S.F.) — all in Boston; and the Department of Epidemiology, Richard M. Fairbanks School of Public Health, and Melvin and Bren Simon Cancer Center, Indiana University, Indianapolis (J.H.). Address reprint requests to Dr. Bao at the Channing Division of Network Medicine, Department of Medicine, Brigham and Women's Hospital and Harvard Medical School, 181 Longwood Ave., Boston, MA 02115, or at ying.bao@channing.harvard.edu.

N Engl J Med 2013;369:2001-11.
DOI: 10.1056/NEJMoa1307352

Nuts and Mortality Study

- 76,464 women in the Nurses' Health Study and 42,498 men in the Health Professionals Follow-up Study
- Individuals who consumed one ounce of nuts, seven or more times per week, had a 20% lower death rate and this association was dose-dependent.
- Those who consumed more nuts were also leaner, and tended to have a healthy lifestyle, such as smoking less and exercising more.

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Nuts and Mortality Media Results

- Over 18 million online media impressions
- Over 25 million broadcast impressions
- Print placements to date are over 44 million in circulation
- The publicity value for the broadcast placements alone was over $ 1 million

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Nuts and Mortality Media Results

The study appeared in media reports in 20 countries including: Africa, Australia, Bulgaria, Canada, China, Egypt, Ghana, India, Iran, Malta, Netherlands, New Zealand, Oman, Pakistan, South Korea, Sri Lanka, Sudan, United Arab Emirates, UK and US.

Nuts and Mortality Media Results

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PLOS | ONE

Tree Nuts Are Inversely Associated with Metabolic Syndrome and Obesity: The Adventist Health Study-2

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Abstract

Objective: To examine the relationships of nut consumption, metabolic syndrome (MetS), and obesity in the Adventist Health Study-2, a relatively healthy population with a wide range of nut intake.

Research Design and Methods: Cross-sectional analysis was conducted on clinical, dietary, anthropometric, and demographic data of 803 adults. MetS was defined according to the American Heart Association and the National Heart, Lung, and Blood Institute diagnostic criteria. We assessed intake of total nuts, tree nuts and peanuts, and also classified subjects into low tree nut/low peanut (LT/LP), low tree/high peanut (LT/HP), high tree nut/high peanut (HT/HP), and high tree/low peanut (HT/LP) consumers. Odds ratios were estimated using multivariable logistic regression.

Results: 32% of subjects had MetS. Compared to LT/LP consumers, obesity was lower in LT/HP (OR = 0.89; 95% CI = 0.53, 1.48), HT/HP (OR = 0.63; 95% CI = 0.40, 0.99) and HT/LP (OR = 0.54; 95% CI = 0.34, 0.88) consumers, p for trend = 0.006. For MetS, odds ratios (95% CI) were 0.77 (0.47, 1.28), 0.65 (0.42, 1.00) and 0.68 (0.43, 1.07), respectively (p for trend = 0.056). Frequency of nut intake (once/week) had significant inverse associations with MetS (3% less for tree nuts and 2% less for total nuts) and obesity (7% less for tree nuts and 3% less for total nuts).

Conclusions: Tree nuts appear to have strong inverse association with obesity, and favorable though weaker association with MetS independent of demographic, lifestyle and dietary factors.

Citation: Jaceldo-Siegl K, Haddad E, Oda K, Fraser GE, Sabaté J (2014) Tree Nuts Are Inversely Associated with Metabolic Syndrome and Obesity: The Adventist Health Study-2. PLoS ONE 9(1): e85133. doi:10.1371/journal.pone.0085133

Editor: Manlio Vinciguerra, University College London, United Kingdom

Received July 24, 2013; **Accepted** November 24, 2013; **Published** January 8, 2014

Funding: The authors gratefully acknowledge support from the National Institutes of Health/National Cancer Institute (UO1CA152939), and a grant from The International Tree Nut Council Nutrition Research and Education Foundation. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Competing Interests: Joan Sabaté has served on the scientific advisory board of Paramount Farms. This does not alter the authors' adherence to all PLOS ONE policies on sharing data and materials, as detailed online in the guide for authors.

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Introduction

Metabolic syndrome (MetS) is a cluster of multiple metabolic risk factors shown to be associated with death, a twofold increased risk for cardiovascular disease, and a fivefold increased risk for type 2 diabetes [1,2,3]. Diagnostic criteria for MetS vary, but the main features include abdominal obesity, elevated triglycerides (TG), reduced HDL-C, elevated blood pressure (BP), and hyperglycemia. Presence of any three of these five conditions constitutes a diagnosis of MetS according to the American Heart Association and the National Heart, Lung, and Blood Institute (AHA/NHLBI) [4]. Between 20% and 30% of the adult population worldwide can be characterized as having MetS [5], and in the United States (US), the prevalence is estimated at 34.3%, based on NHANES data from 2003–2006 [6]. Because MetS is a major risk factor for cardiovascular disease and *type 2 diabetes*, preventing or reversing MetS is of paramount importance.

Nut consumption has been found to improve blood lipid levels [7] and reduce the risk of coronary heart disease [8,9]. Nuts are energy-dense foods high in total fat (50–75% by weight) thus perceived as fattening. Since obesity has become a major public health problem and is a risk factor for cardiovascular disease, it is very pertinent to determine if nut consumption increases the risk of obesity. Few epidemiologic studies have assessed the association between nut intake and BMI or the risk of obesity. We have previously reported an inverse relationship between nut consumption and BMI in the Adventist Health Study 1 cohort [10], but no association was found in the Physician's Health Study [11]. In the Nurses' Health Study II, participants who consumed nuts frequently (two or more times per week) had a 31% reduced risk of weight gain, or a 33% lower risk of obesity [12] than those who rarely or never consumed nuts. Also, in short-term dietary intervention studies, nuts do not appear to contribute to weight gain [12,13,14]. Results from a recent meta-analysis of clinical trials conclude that nut-enriched diets do not increase body weight, BMI or waist circumference [15].

Although still limited, the number of publications on nut intake and MetS is increasing. Results are challenging to translate in part due to variations in the assessment or definition of nut consumption. For example, out-of-hand nut intake (pea

Adventist Health Study-2

- 803 Seventh-day Adventist adults
- Researchers found that a 1-ounce serving of tree nuts per week was significantly associated with 7% less metabolic syndrome.
- High tree nut consumers had significantly lower prevalence of obesity compared to the low tree nut consumers.

NutHealth.org

Adventist Health Study-2 Media Results

To date:

- Print placements to date are nearly 3 million in circulation
- Over 1 million online impressions

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BMJ Open

Effect of tree nuts on metabolic syndrome criteria: a systematic review and meta-analysis of randomised controlled trials

Sonia Blanco Mejia,[1,2] Cyril W C Kendall,[1,2,3] Effie Viguiliouk,[1,2] Livia S Augustin,[1,2] Vanessa Ha,[1,2] Adrian I Cozma,[1,2] Arash Mirrahimi,[1,2,4] Adriana Maroleanu,[2] Laura Chiavaroli,[1,2] Lawrence A Leiter,[1,2,5,6,7] Russell J de Souza,[1,2,8] David J A Jenkins,[1,2,5,6,7] John L Sievenpiper[2,5,6,9]

To cite: Blanco Mejia S, Kendall CWC, Viguiliouk E, *et al*. Effect of tree nuts on metabolic syndrome criteria: a systematic review and meta-analysis of randomised controlled trials. *BMJ Open* 2014;**4**:e004660. doi:10.1136/bmjopen-2013-004660

► Prepublication history and additional material is available. To view please visit the journal (http://dx.doi.org/10.1136/bmjopen-2013-004660).

Received 10 December 2013
Revised 13 June 2014
Accepted 16 June 2014

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ABSTRACT

Objective: To provide a broader evidence summary to inform dietary guidelines of the effect of tree nuts on criteria of the metabolic syndrome (MetS).

Design: We conducted a systematic review and meta-analysis of the effect of tree nuts on criteria of the MetS.

Data sources: We searched MEDLINE, EMBASE, CINAHL and the Cochrane Library (through 4 April 2014).

Eligibility criteria for selecting studies: We included relevant randomised controlled trials (RCTs) of ≥3 weeks reporting at least one criterion of the MetS.

Data extraction: Two or more independent reviewers extracted all relevant data. Data were pooled using the generic inverse variance method using random effects models and expressed as mean differences (MD) with 95% CIs. Heterogeneity was assessed by the Cochran Q statistic and quantified by the I^2 statistic. Study quality and risk of bias were assessed.

Results: Eligibility criteria were met by 49 RCTs including 2226 participants who were otherwise healthy or had dyslipidaemia, MetS or type 2 diabetes mellitus. Tree nut interventions lowered triglycerides (MD=−0.06 mmol/L (95% CI −0.09 to −0.03 mmol/L)) and fasting blood glucose (MD=−0.08 mmol/L (95% CI −0.16 to −0.01 mmol/L)) compared with control diet interventions. There was no effect on waist circumference, high-density lipoprotein cholesterol or blood pressure with the direction of effect favouring tree nuts for waist circumference. There was evidence of significant unexplained heterogeneity in all analyses ($p<0.05$).

Conclusions: Pooled analyses show a MetS benefit of tree nuts through modest decreases in triglycerides and fasting blood glucose with no adverse effects on other criteria across nut types. As our conclusions are limited by the short duration and poor quality of the majority of trials, as well as significant unexplained between-study heterogeneity, there remains a need for larger, longer, high-quality trials.

Trial registration number: NCT01630980.

Strengths and limitations of this study

- This is the first systematic review and meta-analysis to look at the effect of tree nuts on metabolic syndrome criteria.
- This systematic review and meta-analysis involved a large number of trials (49 randomised controlled trials) in participants with a range of metabolic phenotypes.
- Most of the trials (74.4%) were of low quality (Methodological Quality Score (MQS) <8).
- Most of the trials (68.8%) were of short duration (<12 weeks).
- Substantial interstudy heterogeneity remained unexplained.

INTRODUCTION

Dietary patterns including tree nuts have received particular attention for their cardiovascular benefits, and the Food and Drug Administration (FDA) has granted a qualified health claim to tree nuts for cardiovascular risk reduction.[1] General dietary guidelines[2] and heart health guidelines[3 4] also continue to recommend tree nuts alone or as part of the Mediterranean, Portfolio and Dietary Approaches to Stop Hypertension (DASH) dietary patterns for cardiovascular disease prevention and management.

Although these recommendations are based primarily on the low-density lipoprotein cholesterol (LDL-C)-lowering benefits of tree nuts,[4] the cardiovascular risk reduction seen with tree nuts is beyond that which would be predicted by this effect alone. The Prevención con Dieta Mediterránea (PREDIMED) trial showed that despite a non-significant effect on LDL-C [illegible] the trial,[5] a Mediterranean di[illegible] ted with mixed nuts (30 g/[illegible]

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PLOS | ONE

Effect of Tree Nuts on Glycemic Control in Diabetes: A Systematic Review and Meta-Analysis of Randomized Controlled Dietary Trials

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Abstract

Background: Tree nut consumption has been associated with reduced diabetes risk, however, results from randomized trials on glycemic control have been inconsistent.

Objective: To provide better evidence for diabetes guidelines development, we conducted a systematic review and meta-analysis of randomized controlled trials to assess the effects of tree nuts on markers of glycemic control in individuals with diabetes.

Data Sources: MEDLINE, EMBASE, CINAHL, and Cochrane databases through 6 April 2014.

Study Selection: Randomized controlled trials ≥3 weeks conducted in individuals with diabetes that compare the effect of diets emphasizing tree nuts to isocaloric diets without tree nuts on HbA1c, fasting glucose, fasting insulin, and HOMA-IR.

Data Extraction and Synthesis: Two independent reviewer's extracted relevant data and assessed study quality and risk of bias. Data were pooled by the generic inverse variance method and expressed as mean differences (MD) with 95% CI's. Heterogeneity was assessed (Cochran Q-statistic) and quantified (I^2).

Results: Twelve trials (n = 450) were included. Diets emphasizing tree nuts at a median dose of 56 g/d significantly lowered HbA1c (MD = −0.07% [95% CI: −0.10, −0.03%]; P = 0.0003) and fasting glucose (MD = −0.15 mmol/L [95% CI: −0.27, −0.02 mmol/L]; P = 0.03) compared with control diets. No significant treatment effects were observed for fasting insulin and HOMA-IR, however the direction of effect favoured tree nuts.

Limitations: Majority of trials were of short duration and poor quality.

Conclusions: Pooled analyses show that tree nuts improve glycemic control in individuals with type 2 diabetes, supporting their inclusion in a healthy diet. Owing to the uncertainties in our analyses there is a need for longer, higher quality trials with a focus on using nuts to displace high-glycemic index carbohydrates.

Trial Registration: ClinicalTrials.gov NCT01630980

Citation: Viguiliouk E, Kendall CWC, Blanco Mejia S, Cozma AI, Ha V, et al. (2014) Effect of Tree Nuts on Glycemic Control in Diabetes: A Systematic Review and Meta-Analysis of Randomized Controlled Dietary Trials. PLoS ONE 9(7): e103376. doi:10.1371/journal.pone.0103376

Editor: C. Mary Schooling, CUNY, United States of America

Received January 12, 2014; **Accepted** June 22, 2014; **Published** July 30, 2014

Funding: This work was supported by the International Tree Nut Council Nutrition Research & Education Foundation and (Davis, California) and the Canadian Institutes of Health Research (funding reference number, 129920) through the Canada-wide Human Nutrition Trialists' Network (NTN). The Diet, Digestive tract, and Disease (3-D) Centre, funded through the Canada Foundation for Innovation (CFI) and the Ministry of Research and Innovation's Ontario Research Fund (ORF), provided the infrastructure for the conduct of this project. VH and AC were funded by Province of Ontario Graduate Scholarships. AC was also funded by a Canadian Institutes of Health Research (CIHR)-Fredrick Banting and Charles Best Canada Graduate Scholarship and Banting and Best Diabetes Centre (BBDC)-Novo Nordisk Studentship. RJdS was funded by a CIHR Postdoctoral Fellowship Award. DJAJ was funded by the Government of Canada through the Canada Research Chair Endowment. None of the sponsors had a role in any aspect of the present study, including design and conduct of the study; collection, management, analysis, and interpretation of the data; and preparation, review, approval of the manuscript or decision to publish.

Meta-analyses on Nuts and Diabetes and Metabolic Syndrome

- **BMJ Open** article (tree nuts and metabolic syndrome criteria): tree nut consumption resulted in a significant decrease in triglycerides and fasting blood glucose.

- **PLOS ONE** article (tree nuts and glycemic control in diabetes): tree nut consumption resulted in significant decreases in HbA1c and fasting blood glucose levels.

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Meta-analyses on Nuts and Diabetes and Metabolic Syndrome

- Over 1 million online media impressions in the U.S., Canada, India and Ireland
- Nearly 3 million broadcast impressions
- Print placements to date are nearly 1 million in circulation
- The publicity value for the broadcast placements alone was over $120,000

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Current/Future Projects

Nuts & Heart Disease Meta-Analysis

- Life Sciences Research Organization, Inc. (LSRO), in conjunction with an expert panel, conducted an evidence-based analysis of the relationship between the tree nut consumption and the risk of cardiovascular disease (CVD).

- 96 published studies were analyzed

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Nuts & Heart Disease Meta-Analysis

Expert panel conclusions:

- Combining the results of the observational and the interventional study analyses, there is strong evidence that consumption of tree nuts has a beneficial effect on cardiovascular health and a real and practical effect in reducing the risk of CVD.

Nuts & Heart Disease Meta-Analysis

Expert panel conclusions:

- The beneficial effects of nut consumption on blood total cholesterol may be due in part to the replacement of saturated fat with nuts, but replacement of saturated fat does not account for all the beneficial effects.

- The consumption of nuts under the experimental conditions of the analyses reviewed in this report did not increase the risk of obesity.

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Nuts & Heart Disease Meta-Analysis

The expert panel recommended a meta-analysis to strengthen the findings.

Next steps:

- Completion of meta-analysis
- Publication of meta-analysis

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Nut Consumption Analyses

"Tree Nut Consumption is Associated with Better Nutrient Adequacy and Diet Quality in Adults: National Health and Nutrition Examination Survey 2005-2010"

Manuscript has been submitted to the *Journal of the Academy of Nutrition and Dietetics.*

NutHealth.org

Nut Consumption Analyses

- 14,386 adults participating in the 2005-2010 National Health and Nutrition Examination Surveys (NHANES).
- Tree nut consumers were defined as those who consumed more than ¼ ounce of tree nuts (average consumption was about an ounce/day).

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Nut Consumption Analysis

Compared to nonconsumers, tree nut consumers had:

- Higher daily intakes of calories (~350 calories) and nutrients of concern: fiber, potassium, magnesium, monounsaturated and polyunsaturated fats
- Lower intakes of added sugars, saturated fats, and sodium
- Lower body weight, BMI and waist circumference
- Lower systolic blood pressure and higher HDL-cholesterol (the good kind)

NutHealth.org

Follow-up to the 2010 Nuts and Diabetes Study

Researchers are analyzing frozen blood samples from the original study to look at 4 markers to determine if tree nuts have additional benefits in terms of heart health:

- LDL particle size
- Plasma fatty acids
- Urinary isoprostanes
- Clotting factors

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Nutrition, Metabolism & Cardiovascular Diseases (2014) xx, 1–8

Available online at www.sciencedirect.com

Nutrition, Metabolism & Cardiovascular Diseases

journal homepage: www.elsevier.com/locate/nmcd

Nut consumption, serum fatty acid profile and estimated coronary heart disease risk in type 2 diabetes

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Received 30 November 2013; received in revised form 31 March 2014; accepted 3 April 2014
Available online ■ ■ ■

KEYWORDS
Coronary heart disease;
Type 2 diabetes;
Nutrition;
Nuts;
Fatty acids;
Monounsaturated fat (MUFA);
Oleic acid

Abstract *Background and aims:* Nut consumption has been associated with decreased risk of coronary heart disease (CHD) and type 2 diabetes which has been largely attributed to their healthy fatty acid profile, yet this has not been ascertained. Therefore, we investigated the effect of nut consumption on serum fatty acid concentrations and how these relate to changes in markers of glycemic control and calculated CHD risk score in type 2 diabetes.
Methods and results: 117 subjects with type 2 diabetes consumed one of three iso-energetic (mean 475 kcal/d) supplements for 12 weeks: 1. full-dose nuts (50–100 g/d); 2. half-dose nuts with half-dose muffins; and 3. full-dose muffins. In this secondary analysis, fatty acid concentrations in the phospholipid, triacylglycerol, free fatty acid, and cholesteryl ester fractions from fasting blood samples obtained at baseline and week 12 were analyzed using thin layer and gas chromatography. Full-dose nut supplementation significantly increased serum oleic acid (OA) and MUFAs compared to the control in the phospholipid fraction (OA: $P = 0.036$; MUFAs: $P = 0.024$). Inverse associations were found with changes in CHD risk versus changes in OA and MUFAs in the triacylglycerol ($r = -0.256$, $P = 0.011$; $r = -0.228$, $P = 0.024$, respectively) and phospholipid ($r = -0.278$, $P = 0.006$; $r = -0.260$, $P = 0.010$, respectively) fractions. In the cholesteryl ester fraction, change in MUFAs was inversely associated with markers of glycemic control (HbA1c: $r = -0.250$, $P = 0.013$; fasting blood glucose: $r = -0.395$, $P < 0.0001$).
Conclusion: Nut consumption increased OA and MUFA content of the serum phospholipid fraction, which was inversely associated with CHD risk factors and 10-year CHD risk.
Clinical Trial Reg. No.: NCT00410722, clinicaltrials.gov.

Acronyms: MUFA, monounsaturated fatty acid; PUFA, polyunsaturated fatty acid; SFA, saturated fatty acid; FFA, free fatty acid; HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; SBP, systolic blood pressure; DBP, diastolic blood pressure; OA, oleic acid; CHD, coronary heart disease; HbA1c, hemoglobin A1c; FAME, fatty acid methyl esters; NCEP, National Cholesterol Education Program.

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http://dx.doi.org/10.1016/j.numecd.2014.04.001
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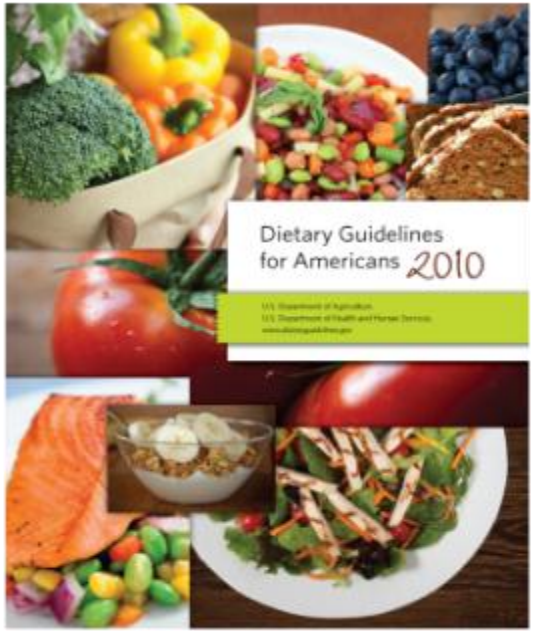

2010 Dietary Guidelines for Americans

Nuts are mentioned in the recommendation to shift food patterns to a more plant-based diet

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2010 Dietary Guidelines

- FDA qualified health claim for nuts and heart disease recommends 1.5 ounces of nuts per day
- In the 2001- 2004 What We Eat in America/NHANES survey, 34% of those surveyed consumed nuts but most only ate ~ ¾ of an ounce
- The 2010 Dietary Guidelines for Americans' 2,000 calorie food pattern recommends four ounces of nuts, seeds and soy products per week

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2015 Dietary Guidelines

Testimony:

- NREF provided oral comments at the 2nd DGAC meeting at the National Institutes of Health in January 2014
- Written comments were submitted to the DGAC in February 2014 highlighting 64 published papers on nuts and health

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2015 Dietary Guidelines

Saturated fat and CVD:

- There is limited evidence for replacing saturated fat with monounsaturated fat due to the fact that the main source of monounsaturated fat in the diet comes from animal sources.

- Yet another reason to increase plant sources of protein…like tree nuts.

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2015 Dietary Guidelines

Snacking:

- Most Americans get 25% of their calories from snacks.
- Replacing just one snack a day with nuts could greatly improve the quality of the diet.

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2015 Dietary Guidelines

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Nut Allergies

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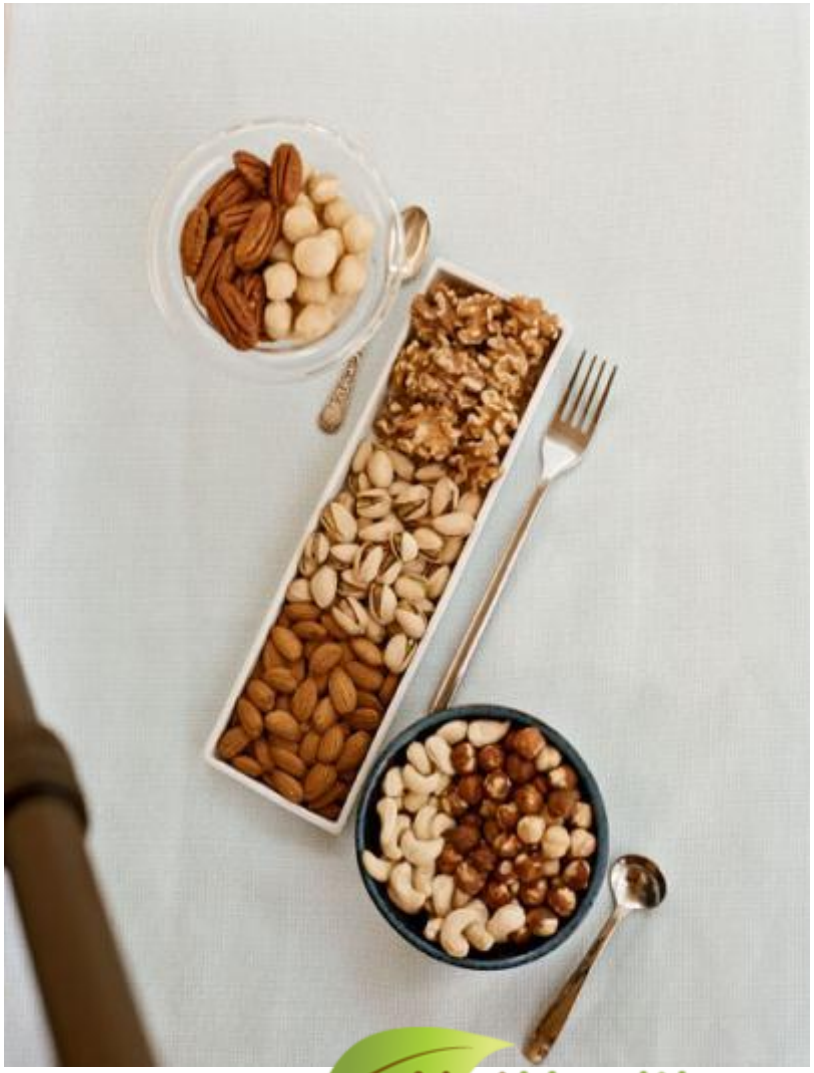
Nut Allergies

- Nut allergies are very individual
- Food Allergy Research and Education (FARE)
- foodallergy.org



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Pecans

This native American tree nut is a member of the hickory family. Long before the arrival of the Europeans to the New World, pecans [pih-KAHNS; pih-KANS; PEE-kans] were an important food in the diet of the Indian tribes of the central and southern regions of the United States.

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Almonds | Brazil Nuts | Cashews | Hazelnuts | Macadamias | Pecans | Pine Nuts | Pistachios | Walnuts

Nutrition Research

Nut consumption and blood lipid levels: A pooled analysis of 25 intervention trials

Sabate´, J., K. Oda, E. Ros, 2010. Nut Consumption and Blood Lipid Levels A Pooled Analysis of 25 Intervention Trials. Arch Intern Med. 170(9):821-827.

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Nuts and healthy body weight maintenance mechanisms

Mattes, R.D., M.L. Dreher, 2010. Nuts and healthy body weight maintenance mechanisms. Asia Pac J Clin Nutr. 19(1):137-141.

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Tree nut consumption improves nutrient intake and diet quality in US adults: an analysis of National Health and Nutrition Examination Survey (NHANES) 1999-2004

O'Neil, C.E., D. R. Keast, V.L. Fulgoni, T.A. Nicklas, 2010. Tree nut consumption improves nutrient intake and diet quality in US adults: an analysis of National Health and Nutrition Examination Survey (NHANES) 1999-2004. Asia Pac J Clin Nutr. 19(1):142-150.

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Featured Recipe

Cajun Spiced Walnuts

A spicy kick makes these spiced walnuts a perfect pre-dinner nibble with drinks. Prepare them a day ahead if you can, as the flavors blend and mellow overnight.

What's New?

A recent study published in the Archives of Internal Medicine shows the important role of tree nuts in a heart healthy diet.

Pecans

This native American tree nut is a member of the hickory family. Long before the arrival of the Europeans to the New World, pecans [pih-KAHNS; pih-KANS; PEE-kans] were an important food in the diet of the Indian tribes of the central and southern regions of the United States. Two famous people partial to pecans were George Washington, who frequently carried them in his pockets, and Thomas Jefferson, who dedicated part of his time to their cultivation.

Pecans have a smooth shell and the kernel makes up 40-60% of the in-shell. The principle producing countries are the U.S., Mexico, Australia and Israel. Pecans are marketed in in-shell or shelled form and can be eaten raw or roasted. They're used in the bakery, confectionery and dairy industry, in chocolate and ice creams. Pecans are also added to cereals, breads, pastries and cookies, and are great in salads, main dishes, as toppings on desserts and as a snack.

The wood of the pecan tree is highly appreciated for its timber and is often used as decorative paneling.

For more information about pecans, visit www.georgiapecansfit.org, www.ilovepecans.org and www.tpga.org.

» View research for Pecans

» View recipes for Pecans

PECAN NUTRITION FACTS

SERVING SIZE
1 OZ.(28.35G) APPROX 19 HALVES

Amount Per Serving			
Calories 200	Calories from Fat 180		
	%Daily Value*		
Total Fat	20g		
Saturated Fat	2g		
Polyunsaturated Fat	6g		
Monounsaturated Fat	12g		
Cholesterol	0mg	0%	
Sodium	0mg	0%	
Potassium	116mg	4%	
Total Carbohydrate	4g		
Dietary Fiber	3g		
Protein	3g		
Vitamin A	0%	Vitamin C	0%
Calcium	2%	Iron	4%
Vitamin E	2%	Thiamin	10%
Vitamin B_6	2%	Folate	2%
Phosphorus	8%	Magnesium	8%
Zinc	8%	Selenium	2%
Copper	15%	Manganese	60%

*Percent Daily Values are based on a 2,000 calorie diet. Daily Values may be higher or lower depending on your calorie needs. Data from the USDA National Nutrient Database for Standard Reference Release 22 (2009).

**Pecans nuts are unsalted and unroasted.

Featured Recipe

Pacific Rim Pecan Crusted Turkey Cutlets

Give an ordinary dish some Pacific flare by adding Oriental hoisin sauce. You can make it as spicy or as mild as you wish.

» View Recipe

For more information on all 9 tree nuts, click the links below:

» Tree Nut Flavonoids & Phytosterols Fact Sheet

» Nutrients and % DV in 1 Ounce of Tree Nuts

» Nutrients in 100 Grams of Tree Nuts

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#GoNuts in the Kitchen

Submit a recipe that includes tree nuts for a chance to win a $150 Williams-Sonoma gift card!

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ABOUT

The International Tree Nut Council Nutrition Research & Education Foundation (INC NREF), a nonprofit organization, represents nine tree nut industries.

http://nuthealth.org/

APPS

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To get all the facts and recipes on tree nuts, go to: http://nuthealth.org/

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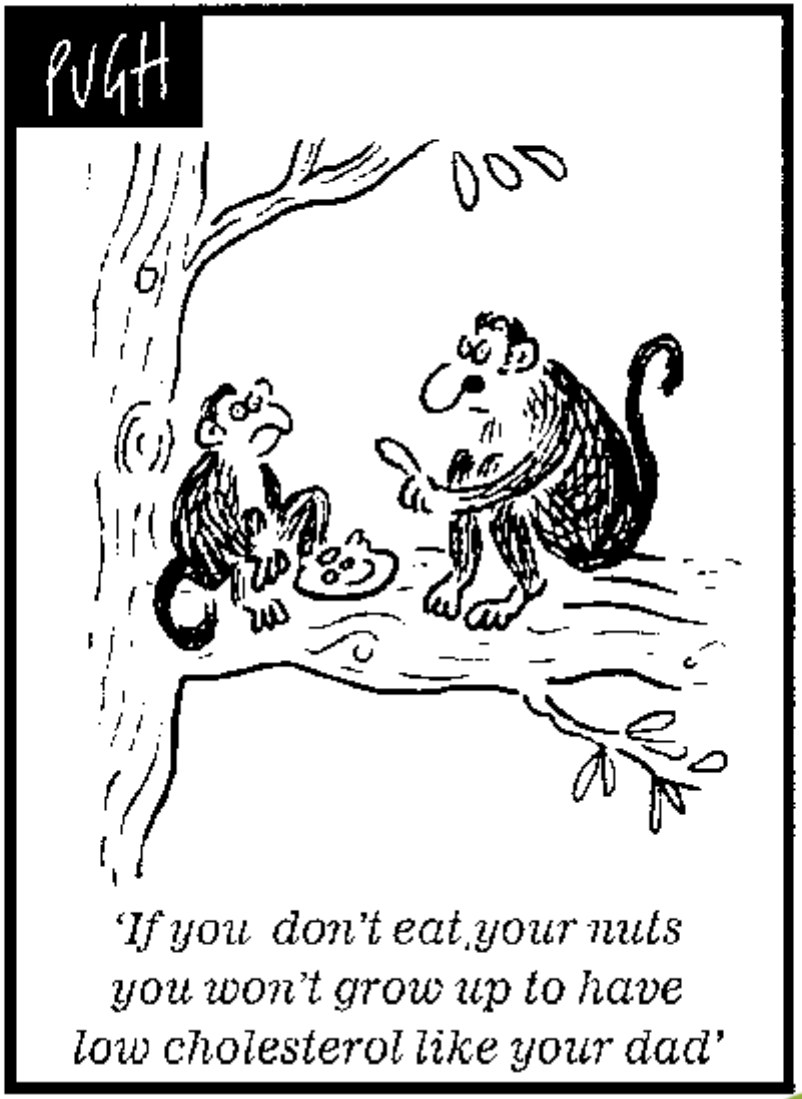

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