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Prof. Jordi Salas-Salvadó, Chairman of the INC World Forum for Nutrition Research and Dissemination



2014, THE YEAR OF META-ANALYSES

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The number of new investigations focusing on the study of different health problems is increasing rapidly. Therefore, when it comes to address a particular aspect, it is common to encounter several experimental studies which try to answer it. In this context, systematic reviews and meta-analyses gather systematic, objective and scientific methodology to quantitatively review a number of primary investigations addressing similar topics. Currently, they both represent a fundamental tool to reliably summarize scientific evidence while increasing the validity of those conclusions drawn from single-experimental studies. Additionally, they also serve to easily identify any future prospects where new investigating efforts should be united. Furthermore, they are considered the highest scientific evidence, thus playing a fundamental role in any clinical decision-making within the context of the Evidence-Based Clinical Practice.

Nonetheless, not all meta-analyses may be considered as the highest evidence for a certain health problem. Importantly, their validity largely relies on its methodological quality as well as on the quality of those experimental studies included. Particularly, meta-analyses including high quality randomized-control trials (RCT) -with an adequate randomization of the study participants and following a double blinded design- represent highly reliable evidence to best decide the most suitable and convenient treatment programs for specific health problems.

The year 2014 held the greatest number of systematic reviews and meta-analyses evaluating the relationship between tree nuts and risk for cardiovascular disease (CVD), type II diabetes (T2D) and all-cause mortality. For instance, two systematic reviews and meta-analyses from RCT's^{1,2} from the research groups led by Prof. Jenkins DJ and Prof.

Sievenpiper JL (Canada) concluded that tree nuts intake improve glycemic control in diabetic patients, and provide beneficial effects on the metabolic syndrome by slightly reducing fasting glucose and triglycerides. Another recent meta-analysis from RCT's³ carried out by groups of Dr. Mohammadifard N (Iran) and Prof. Salas-Salvadó J (Spain) clearly showed that tree nut intake reduced systolic blood pressure in non-diabetic patients. Seven other systematic reviews and meta-analyses have been published including a substantial number of large prospective-cohort studies⁴⁻¹⁰. Of those, six meta-analyses carried out by Ma et al.⁴(China), Shi et al.⁵(China), Grosso et al.⁶(Italy), Zhou et al.⁷(China), Luo et al.⁸(China), and Afshin et al.⁹(USA) evidenced a protective effect of tree nuts intake for the prevention of CVD, all-cause mortality and cancer mortality; whereas the results for the prevention of T2D remained inconclusive in the last three studies. Lastly, one recent meta-analysis from Guo et al.¹⁰(China) concluded that intake of more than 2 servings/week of tree nuts was inversely associated to risk for hypertension, but not for T2D.

In conclusion, both systematic reviews and meta-analyses are currently a widely consolidated methodology to apply in all disciplines of Health Sciences. Despite its strict methodology and highly controlled quality process to avoid biased conclusions, the final results should be carefully interpreted.

These meta-analysis analyzing the effect of nuts on health adds an unprecedented quality of evidence of the beneficial effects of nut consumption, and can be used to change current Dietary Guidelines and to substantiate Health Claims.



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2015 INC AWARD FOR EXCELLENCE IN RESEARCH

By Jeffrey B. Blumberg, PhD, FASN, FACN, CNS-S



Modern human nutrition research on tree nuts has dramatically transformed the perception -and the consumption- of these important and healthful foods. Just three decades ago nuts were generally perceived like candy, a fun food to be eaten occasionally and only in limited amounts. Eating too many nuts was presumed to add extra fat calories to your diet and extra pounds to your weight. Since then, an emerging body of solid scientific evidence has been published, much of it in highly respected journals, and translated into practical advice by dietitians and other healthcare professionals as well as the popular media.

Nuts are now recognized as one of our most nutritional foods, containing high amounts of vegetable protein and unsaturated fatty acids. In addition, nuts are now generally understood to be useful sources of vitamins (including vitamins E, B6, folate, and niacin) and minerals (calcium, magnesium, and potassium) as well as critical phytochemicals (including fiber, phytosterols, and polyphenols). Both observational studies and clinical trials have consistently shown that tree nuts are associated with modest but consistent reductions in blood pressure, serum cholesterol, and biomarkers of inflammation and improvements in blood glucose control and cardiovascular function. Recently, some studies have suggested that tree nut consumption may also improve cognitive function and benefit people with Metabolic Syndrome. Examinations of large scale prospective cohorts have recently suggested that the frequency of nut consumption is associated with a decrease in total and cause-specific mortality, independently of other predictors of death.

My colleagues and I in the Antioxidants Research Laboratory at the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University have been investigating the role of tree nuts for over 15 years. Our early efforts were focused on analytical methods for the determination of flavonoids and other polyphenols in tree nuts. We then used this capability to identify and characterize the phytochemical profiles of different

cultivars, different growing regions, and different harvest years. This work has contributed to the information now available in nutrient databases in America and Europe. These methods were equally useful in our studies of the absorption and metabolism of these compounds which we have conducted in cell cultures, animal models, and human studies. We have also worked to understand the mechanisms of action of tree nuts and the synergy that appears to exist between constituents in the skin, nutmeat, and oil. For example, we have found a synergistic antioxidant effect between the polyphenols found in nut skins and the vitamin E found in nut oil. While this fundamental research is still ongoing, we are also exploring the bioactivity of tree nuts in healthy older adults as well as in patients with cardiovascular disease and type 2 diabetes. In addition to substantiating the benefits of nuts on critical risk factors of age-related chronic diseases such as cognitive performance, glucose control, dyslipidemia, inflammation, and oxidative stress, we are confirming the work of others demonstrating an overall improvement in the quality of the diet associated with the addition of tree nuts. Of course, research efforts today are rarely insular and we have been fortunate to be able to collaborate and interact extensively with colleagues in Asia and Europe, often hosting visiting scientists who return home to continue their work on tree nuts.

“We should now move toward clearer, food-based advice and advocate for dietary guidance that explicitly recommends nuts along with whole grains, fruits, and vegetables.”

It is interesting to look at the recent nutritional history of nuts and health. At the beginning of the 20th century in the United States, nuts were recommended as a good source of protein (with little carbohydrate) for people with diabetes. During World War II, nuts were suggested to everyone in place of meat as a protein source. In the following 45 years, broad admonitions against nuts came to the fore as a way for people to comply with recommendations for low-fat diets. The combined efforts of government and industry in supporting nut research during the last 20 years, from the seminal work of David Jenkins in Canada to the landmark PREDIMED trial by Emilio Ros et al in Spain, has created an unequivocal success in supporting the important contribution that nuts can make to human nutrition. Nuts are now fully recognized as part of a healthy dietary pattern along with fruits, vegetables, whole grains, seafood, and legumes. However, nuts still often lack the necessary visibility as a healthy choice when classified as a “protein food” along with meat, poultry, seafood, eggs, and soy. Nutrition research has provided clear evidence that we should now move toward clearer, food-based advice and advocate for dietary guidance that explicitly recommends nuts along with whole grains, fruits, and vegetables.