

Three bright green apples are arranged in a cluster. One apple is in the foreground, slightly to the right, and two are behind it, one to the left and one to the right. The apples are glossy and have short brown stems.

The Year in Plants 2024: Evidence About the Inevitable Way We Need to Live

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Faculty Disclosure

- I, Andrew Freeman, MD FACC FACP, faculty for this educational event, have within the past two years had financial or other relationships, as follows, with ineligible companies whose products or services might be related to the content of this educational activity:
 - consultant fees from Medtronic; J&J, Novartis, Agepha
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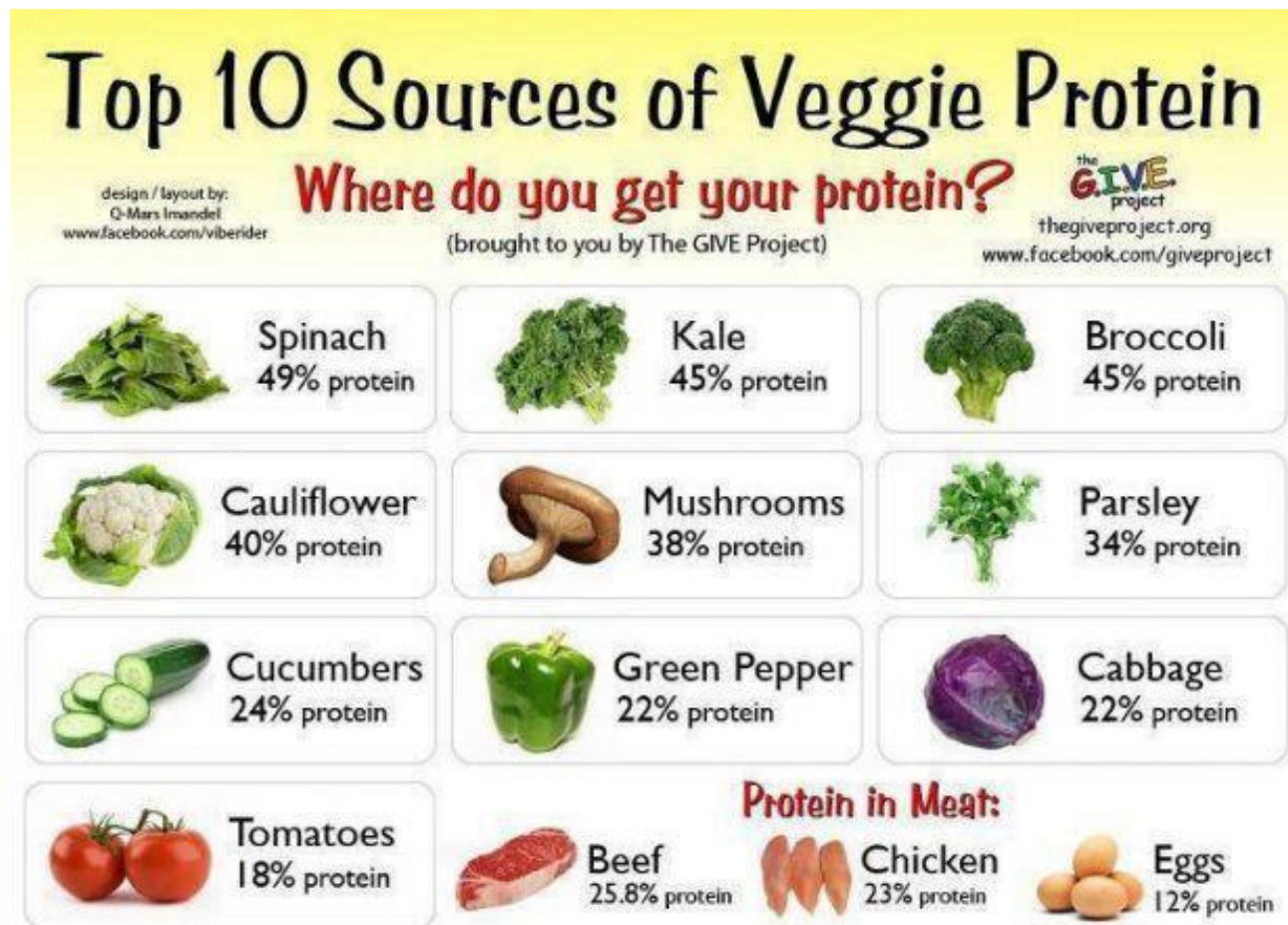
Notice

- There are many well-done randomized trials showing the efficacy of plant-based diets in improving health outcomes.
- There are some studies that are observational, and do not show cause, but show significant relationships.



Getting Enough Protein?

- Yes, yes, yes!





Healthcare & Pharmaceuticals | Government Health Policy | Public Health

More than half of the world will be overweight or obese by 2035 - report

Reuters

March 2, 2023 5:07 AM MST · Updated 10 months ago



Aa



Visitors to the Southbank are seen reflected in rainwater, in London, Britain, December 29, 2022. REUTERS/Peter Nicholls [Acquire Licensing Rights](#)

LONDON, March 2 (Reuters) - More than half of the world's population will be overweight or obese by 2035 without significant action, according to a new report.

<https://www.reuters.com/business/healthcare-pharmaceuticals/more-than-half-world-will-be-overweight-or-obese-by-2035-report-2023-03-02/>



Stats

- The World Obesity Federation's 2023 atlas predicts that 51% of the world, or more than 4 billion people, will be obese or overweight within the next 12 years.
- The report found that childhood obesity could more than double from 2020 levels, to 208 million boys and 175 million girls by 2035.
- The cost to society is significant as a result of the health conditions linked to being overweight, the federation said: more than \$4 trillion annually by 2035, or 3% of global GDP.



Is that right?



⊕ Heart Attack And S

“Heart disease has now been the leading cause of death in this country for 100 years straight, since 1921, according to the [Centers for Disease Control and Prevention](#),” said Joseph C. Wu, M.D., Ph.D., FAHA, volunteer president of the American Heart Association, director of the Stanford Cardiovascular Institute and the Simon H. Stertz Professor of Medicine and Radiology at Stanford School of Medicine. “Heart disease along with stroke, which is the fifth leading cause of death, claims more lives in the U.S. than all forms of cancer and chronic lower respiratory disease combined, based on the most recent data available. So, the results of this survey, finding that most people do not know the significant impact of heart disease, is discouraging and even a bit frightening.”

In the survey, only 49% of people named heart disease as the leading cause of death; 16% said they didn't know the leading cause and 18% listed cancer as the top cause of death of people in the U.S.

despite 100-year reign

Heart disease remains the leading cause of death in U.S., according to a new report from the American Heart Association; yet fewer than half of survey respondents knew that

<https://newsroom.heart.org/news/more-than-half-of-u-s-adults-dont-know-heart-disease-is-leading-cause-of-death-despite-100-year-reign#:~:text=Heart%20disease%20has%20now%20been,Stanford%20Cardiovascular%20Institute%20and%20the>



Starting the Year Off Right

- 75 230 women from the Nurses' Health Study (1984-2020) and 44 085 men from the Health Professionals Follow-Up Study (1986-2020)
- ~ 36 years of followup
- Compared diets based on alternative healthy eating index
- Comparing the highest with the lowest quintiles of healthy eating index (a measure of plant-based eating)
- **19% more mortality overall!**



Shan Z, Wang F, Li Y, et al. Healthy Eating Patterns and Risk of Total and Cause-Specific Mortality. *JAMA Intern Med.* 2023;183(2):142–153.
doi:10.1001/jamainternmed.2022.6117



Start With Legumes

- 32 cohorts (31 publications) involving 1,141,793 participants and 93,373 deaths from all causes were included
- Higher vs lower intakes
 - 6% less death
 - 9% less stroke
- Linear dose-response analysis, a 50 g/d increase in legume intake was associated with a 6% reduction in the risk of all-cause mortality



Zargarzadeh N, Mousavi SM, Santos HO, Aune D, Hasani-Ranjbar S, Larijani B, Esmailzadeh A. Legume Consumption and Risk of All-Cause and Cause-Specific Mortality: A Systematic Review and Dose-Response Meta-Analysis of Prospective Studies. *Adv Nutr*. 2023 Jan;14(1):64-76. doi: 10.1016/j.advnut.2022.10.009. Epub 2023 Jan 5. PMID: 36811595; PMCID: PMC10103007.

Add the Phytoestrogens

- Nurses' Health Study and Health Professionals Follow-up Study ~200,000 men and women followed for 34 years
- Higher intakes compared with lower
 - CVD death = 11% less
 - Cancer death = 10% less
 - Non CVD/cancer death = 14% less



Chen Z, Qian F, Hu Y, Voortman T, Li Y, Rimm EB, Sun Q.
Dietary phytoestrogens and total and cause-specific mortality:
results from 2 prospective cohort studies. Am J Clin Nutr. 2023
Jan;117(1):130-140. doi: 10.1016/j.ajcnut.2022.10.019. Epub
2022 Dec 20. PMID: 36789932; PMCID: PMC10196593.

- More working-age people are self-reporting long-term health conditions, with 36% saying that they had at least one long-term health condition in Quarter 1 (Jan to Mar) 2023, up from 31% in the same period in 2019 and 29% in 2016.

TIMES HEALTH COMMISSION

NHS 'forced to clear up the dirt' as obesity soars

Obesity costs the NHS £6 billion every year and the government estimates that this figure will rise to almost £10 billion by 2050. Unless ministers abandon their reluctance to encourage people to live healthier lives, the health service risks becoming unaffordable

in Quarter 1 2023, with the majority (over 1 million) reporting it as a secondary health condition rather than their main one.

- For those inactive because of long-term sickness and who had a main health condition that is musculoskeletal in nature, over 70% reported that they had more than one type of musculoskeletal condition

<https://www.thetum>
<https://www.ons.gc>

/2019to2023



It Starts With Kids

- Data from the 2021 National Survey of Children's Health
- 32% of children ages 1 to 5 years did not eat fruit daily
- 49% did not consume a vegetable daily
- 57% had a sugar-sweetened drink at least once a week.



Hamner HC, Dooyema CA, Blanck HM, et al. Fruit, Vegetable, and Sugar-Sweetened Beverage Intake Among Young Children by State — United States, 2021. MMWR Morb Mortal Wkly Re 2023;72:165–170.

DOI: <http://dx.doi.org/10.15585/mmwr.mm7207a1>.



Eat Those Carrots!



- 204 participants of the DIABIMCAP Study cohort (Carotid Atherosclerosis in Newly Diagnosed Type 2 Diabetic Individuals)

- Position and between participants
 - Subject concentrations at the
- “In our study, subjects with atherosclerotic plaque presence showed significantly lower (almost half of) plasma concentrations of total, α - and β -carotenes than those without atherosclerotic plaque. However, this association was attenuated after multivariate adjustment, and remained significant only for total carotenes, suggesting that the potential atheroprotective effects of carotenes might be synergistical and not given by a single chemical specie (α - or β -), as we previously observed for lycopenes in subjects with diabetes.”**



Bujosa F, Herreras Z, Catalán M, Pinyol M, Lamuela-Raventos RM, Martínez-Huélamo M, Gilabert R, Jiménez A, Ortega E, Chiva-Blanch G. Total carotene plasma concentrations are inversely associated with atherosclerotic plaque burden: A post-hoc analysis of the DIABIMCAP cohort. Clin Nutr. 2023 Jul;42(7):1168-1174. doi: 10.1016/j.clnu.2023.05.005. Epub 2023 May 13. PMID: 37230851

Pregnancy and the Diet



- 1221 high-risk pregnant women
- Randomized at 19–23 weeks' gestation to: a Mediterranean diet intervention, a Mindfulness-Based Stress Reduction program, or usual care
- Participants in the Mediterranean diet group had significantly lower perceived stress and anxiety scores (PSS mean (SE) 15.9 (0.4) vs. 17.0 (0.4), $p = 0.035$ (PSS = Perceived Stress Scale; SE = STAI-anxiety mean))



Casas, I.; Nakaki, A.; Pascal, R.; Castro-Barquero, S.; Youssef, L.; Genero, M.; Benitez, L.; Larroya, M.; Boutet, M.L.; Casu, G.; et al. Effects of a Mediterranean Diet Intervention on Maternal Stress, Well-Being, and Sleep Quality throughout Gestation—The IMPACT-BCN Trial. *Nutrients* **2023**, *15*, 2362.
<https://doi.org/10.3390/nu15102362>

Pregnant? Eat More Fiber

- 76,207 mother-infant pairs were analyzed using data from the Japan Environment and Children's Study, a nationwide prospective cohort study
- The lowest (compared to the highest) intake group of total dietary fiber had:
- 51% higher risk of delayed communication (aOR, 1.51; 95% CI, 1.32–1.74)
- 45% worse fine motor (aOR, 1.45; 95% CI, 1.32–1.61)
- 46% worse problem-solving (aOR, 1.46; 95% CI, 1.32–1.61)
- 30% worse personal-social skills (aOR, 1.30; 95% CI, 1.12–1.50)



Miyake K, Horiuchi S, Shinohara R, Kushima M, Ottawa S, Yui H, Akiyama Y, Ooka T, Kojima R, Yokomichi H, Mochizuki K, Yamagata Z; Japan Environment Children's Study Group. Maternal dietary fiber intake during pregnancy and child development: the Japan Environment and Children's Study. *Front Nutr.* 2023 Jul 27;10:1203669. doi: 10.3389/fnut.2023.1203669. PMID: 37575329; PMCID: PMC10415901.



Eating Cholesterol = DM2?

- 11 prospective studies comprising of 355,230
- For every 100 mg per day of added cholesterol the risk increased by 5%.
- Comparing highest to lowest – risk increased by 15%
- Western countries were worse at 19% more risk
- Avoiding animal products, the only dietary source of cholesterol, is best for diabetes prevention.



Li Y, Pei H, Zhou C, Lou Y. Dietary cholesterol consumption and incidence of type 2 diabetes mellitus: A dose-response meta-analysis of prospective cohort studies. *Nutr Metab Cardiovasc Dis.* 2023;33:2-10. doi:10.1016/j.numecd.2022.07.016

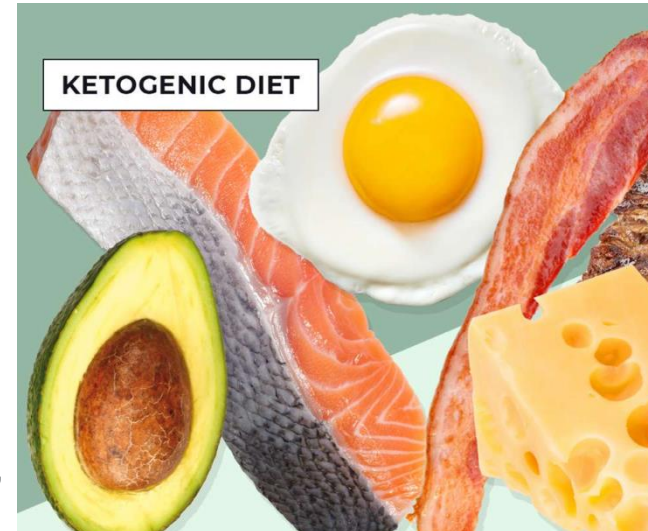


Keto Beware

- Diets of 305 people eating a LCHF diet with about 1,200 people eating a standard diet
- UK Biobank, followed people > 10yrs
- 11.8 years of follow-up – and after adjustment for other risk factors for heart disease, such as diabetes, high blood pressure, obesity and smoking – people on an LCHF diet had > **2x higher risk of having several major cardiovascular events**
- Also Higher levels of LDL-C (3.80 vs. 3.64 mmol/L; $p=0.004$) and apoB (1.09 vs. 1.04 g/L; $p<0.001$).



Iatan I, et al. Featured Clinical Research II. Presented at: American College of Cardiology Scientific Session; March 4-6, 2023; New Orleans (hybrid meeting).

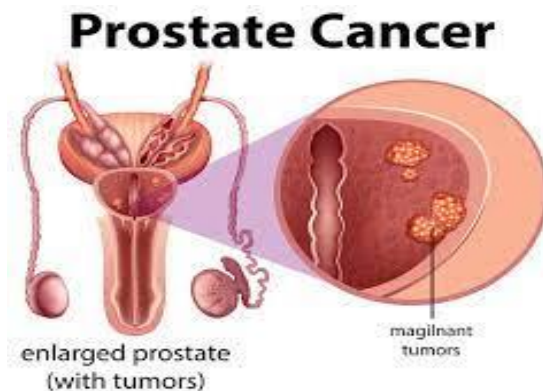


Prostate Cancer

- Men who closely followed a plant-based diet lowered their risk for progression and recurrence of cancer by 52% and 53%, respectively, when compared to those who did not closely follow a plant-based diet
- Men over 65 had benefit, too, when combined with exercise

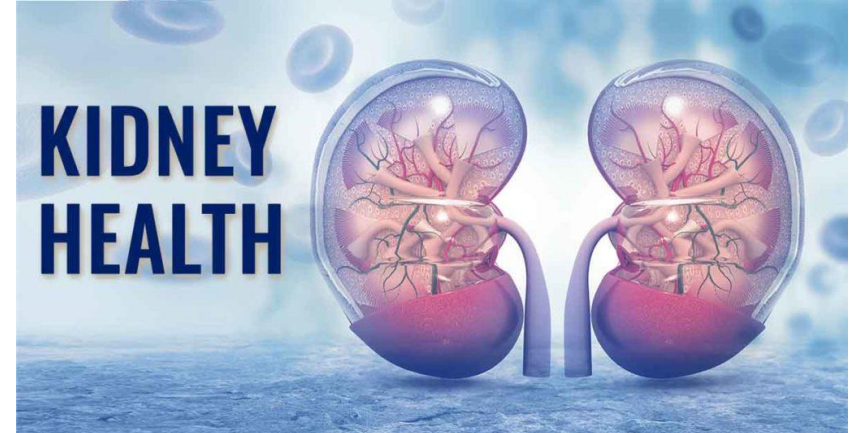


Liu VN, Van Blarigan EL, Zhang L, et al. Associations between plant-based diets and risk of disease progression in men with prostate cancer. Abstract presented at: 2023 American Society of Clinical Oncology (ASCO) Genitourinary Cancers Symposium: February 16-18, 2023; San Francisco, CA.



Kidney Function

- New meta-analysis with 4 RCTs with a total of 346 participants were included in the presented systematic review. Two largest RCTs reported an increase in eGFR following a change to a vegetarian diet ($p = 0.01$ and $p = 0.001$). The remainder had missing data with no effect noted.
- Conclusions “a vegetarian diet improves renal filtration function in CKD patients”



Świątek Ł, Jeske J, Miedziaszczyk M, Idasiak-Piechocka I. The impact of a vegetarian diet on chronic kidney disease (CKD) progression - a systematic review. BMC Nephrol. 2023 Jun 12;24(1):168. doi: 10.1186/s12882-023-03233-y. PMID: 37308813; PMCID: PMC10259031.

Kidney Function II

- 117,809 participants who completed at least 1 dietary questionnaire and had an estimated glomerular filtration rate (eGFR) \geq 60mL/min/1.73m², a urinary albumin-creatinine ratio (UACR) <30mg/g, and no history of CKD
- Followed 9.9 years
- Hazard ratios (AHR):

Second = 10% less CKD

Third = 17% less CKD

Highest quartiles of plant protein intake = 18% less CKD

- Authors conclusion: " In this large, prospective cohort study, greater dietary plant protein intake was associated with a lower risk of incident CKD"



Heo GY, Koh HB, Kim HJ, Kim KW, Jung CY, Kim HW, Chang TI, Park JT, Yoo TH, Kang SW, Han SH. Association of Plant Protein Intake With Risk of Incident CKD: A UK Biobank Study. Am J Kidney Dis. 2023 Dec;82(6):687-697.e1. doi: 10.1053/j.ajkd.2023.05.007. Epub 2023 Jul 28. PMID: 37517545.

Calcium Supps?

- 434,374 participants from the UK Biobank
- After multivariable adjustment, habitual calcium supplementation *in diabetics* was significantly associated with higher risks of:
- CVD incidence **34% More** (HR 1.34; 95% CI 1.14, 1.57)
- CVD mortality **67% More** (HR 1.67; 95% CI 1.19, 2.33)
- All-cause mortality **44% More** (HR 1.44; 95% CI 1.20, 1.72)
- No significant association was observed in participants without diabetes
- ➔ **Cardiometabolic/renal disease is “one syndrome” and this may be a marker of poor eating**



Qiu Z, Lu Q, Wan Z, Geng T, Li R, Zhu K, Li L, Chen X, Pan A, Manson JE, Liu G. Associations of Habitual Calcium Supplementation With Risk of Cardiovascular Disease and Mortality in Individuals With and Without Diabetes. *Diabetes Care*. 2024 Feb 1;47(2):199-207. doi: 10.2337/dc23-0109. PMID: 37506393.



1 in 4!

> JAMA Cardiol. 2023 Nov 1;8(11):1050-1060. doi: 10.1001/jamacardio.2023.3241.

Prevalence and Overlap of Cardiac, Renal, and Metabolic Conditions in US Adults, 1999-2020

John W Ostrominski¹, Suzanne V Arnold², Javed Butler^{3, 4}, Gregg C Fonarow⁵,
Jamie S Hirsch⁶, Swetha R Palli⁷, Bonnie M K Donato⁷, Christina M Parrinello⁸,
Thomas O'Connell⁹, Eric B Collins¹⁰, Jonathan J Woolley⁹, Mikhail N Kosiborod²,
Muthiah Vaduganathan¹

Results: From 2015 through March 2020, of 11 607 US adults included in the analysis (mean [SE] age, 48.5 [0.4] years; 51.0% women), 26.3% had at least 1 CRM condition, 8.0% had at least 2 CRM conditions, and 1.5% had 3 CRM conditions. Overall, CKD plus T2D was the most common CRM dyad (3.2%), followed by CVD plus T2D (1.7%) and CVD plus CKD (1.6%). Participants with higher causes of death, disability, and health care-associated costs. However, the frequency with which CRM conditions coexist has not been comprehensively characterized to date.

Objective: To examine the prevalence and overlap of CRM conditions among US adults currently and over time.

Design, setting, and participants: To establish prevalence of CRM conditions, nationally representative, serial cross-sectional data included in the January 2015 through March 2020 National Health and Nutrition Examination Survey (NHANES) were evaluated in this cohort study. To assess temporal trends in CRM overlap, NHANES data between 1999-2002 and 2015-2020 were compared. Data on 11 607 nonpregnant US adults (≥20 years) were included. Data analysis occurred between November 10, 2020, and November 23, 2022.

Main outcomes and measures: Proportion of participants with CRM conditions, overall and stratified by age, defined as cardiovascular disease (CVD), chronic kidney disease (CKD), type 2 diabetes (T2D), or all 3.

Results: From 2015 through March 2020, of 11 607 US adults included in the analysis (mean [SE] age, 48.5 [0.4] years; 51.0% women), 26.3% had at least 1 CRM condition, 8.0% had at least 2 CRM conditions, and 1.5% had 3 CRM conditions. Overall, CKD plus T2D was the most common CRM



See What You Eat?

- Japanese study: 647 and 100 participants were identified as having diabetes and diabetic retinopathy
- After adjusting for potential confounders:
- Highest quartiles of total fat = **2.6x the likelihood** of diabetic retinopathy
- Highest quartiles of SFA intake = **2.4x the likelihood** of diabetic retinopathy
- Authors conclude: “These results suggest that a high intake of fat and SFA may affect the development of DR, even in individuals whose total fat intake is generally much lower than that of Westerners.”



Sasaki, M., Yuki, K., Hanyuda, A. *et al.* Associations between fatty acid intake and diabetic retinopathy in a Japanese population. *Sci Rep* **13**, 12903 (2023).
<https://doi.org/10.1038/s41598-023-39734-x>



Male Fertility

- New review looking at Male fertility shows greater adherence to the Mediterranean diet is linked to:
- Improved semen quality, total sperm count, higher sperm concentration, and sperm motility
- Thought due to the high intake of antioxidants from fruits and vegetables, and the low intake of trans fat and saturated fats.



Tomada I, Tomada N. Mediterranean Diet and Male Fertility. *Endocrines*. 2023; 4(2):394-406.
<https://doi.org/10.3390/endocrines4020030>

Genetics to Blame?



- Genome-wide association study to identify genetic variants associated with high fat mass (obesity; $n = 10,502$) and combined them to generate polygenic risk scores (PRS) of genetic variants interacting with each other
- Adults aged over 40 while excluding body-fat-related diseases in a city-hospital-based cohort ($n = 53,828$).
- Plant-based diets were associated with the lowest body fat and the least propensity to develop obesity when compared to high-protein or low-energy intake diets.
- Authors conclude: “They could **offset the effects of high genetic risk for high body fat. In conclusion, modulating nutrient intakes might overcome a high genetic risk for obesity.**”



Daily JW, Park S. Association of Plant-Based and High-Protein Diets with a Lower Obesity Risk Defined by Fat Mass in Middle-Aged and Elderly Persons with a High Genetic Risk of Obesity. *Nutrients*. 2023 Feb 20;15(4):1063. doi: 10.3390/nu15041063. PMID: 36839421; PMCID: PMC9960655.

Plants on Your Mind

- Participants in early addiction treatment who followed a plant-based diet improved mental health outcomes like self-esteem and resilience more than those who did not follow a plant-based diet
- Pilot study of 33 individuals, followed by Healthy Eating Index-2015 (HEI-2015) and Plant-based Diet Indices (PDI)



Kemp T, Lopez NV, Ward S, Sherzai D, Sherzai A, Sutcliffe J. The INFINITE Study: pilot research exploring plant-based nutrition in treatment for substance use disorders. *Am J Lifestyle Med.* 2022;0(0). doi:10.1177/15598276221120227



Garden, More!

- 145 study participants (Denver Urban Gardens) who received a community garden plot for the 2017 to 2019 growing seasons
- Within 6 months, the new gardeners were averaging two to three visits to the community garden a week, eating on average 1.4g more fiber per day, had upped their physical activity by ~42 minutes per week, and saw their stress and anxiety levels decrease.



Litt JS, Alaimo K, Harrall KK, Hamman RF, Hébert JR, Hurley TG, Leiferman JA, Li K, Villalobos A, Coringrato E, Courtney JB, Payton M, Glueck DH. Effects of a community gardening intervention on diet, physical activity, and anthropometry outcomes in the USA (CAPS): an observer-blind, randomised controlled trial. *Lancet Planet Health*. 2023 Jan;7(1):e23-e32. doi: 10.1016/S2542-5196(22)00303-5. PMID: 36608945; PMCID: PMC9936951.

How Much Exercise

- 2 large prospective U.S. cohorts, 116,221
- Adults self-reported leisure-time physical activity—defined as exercise that is not done at work—through a validated questionnaire.
- Repeated up to 15 times over the course of 30 years.
- Meeting the long-term leisure-time activity guideline (150–299 min/wk) was similarly associated with lower mortality: lower risk of all-cause (20-21%), CVD (22-25%), and non-CVD (19-20%) mortality
- **2-4x above the moderate physical activity recommendations—about 300 to 599 minutes each week:**
 - 26% to 31% lower all-cause mortality
 - 28% to 38% had lower cardiovascular mortality.
 - 25% to 27% lower non-cardiovascular mortality.



Lee DH, Rezende LFM, Joh HK, Keum N, Ferrari G, Rey-Lopez JP, Rimm EB, Tabung FK, Giovannucci EL. Long-Term Leisure-Time Physical Activity Intensity and All-Cause and Cause-Specific Mortality: A Prospective Cohort of US Adults. *Circulation*. 2022 Aug 16;146(7):523-534. doi: 10.1161/CIRCULATIONAHA.121.058162. Epub 2022 Jul 25. PMID: 35876019; PMCID: PMC9378548.

6 Minutes of Cycling



- Brain-derived neurotrophic factor (BDNF) promotes neuroplasticity (the ability of the brain to form new connections and pathways) and the survival of neurons.
- Want more BDNF?
 - Fasting for 20 hours
 - Light exercise (90-minute low intensity cycling)
 - High-intensity exercise (six-minute bout of vigorous cycling)
 - Combined fasting and exercise
- Brief vigorous exercise was the most efficient way to increase BDNF compared to one day of fasting with or without a lengthy session of light exercise.
- BDNF increased by 4-5x (396 pg L⁻¹ to 1170 pg L⁻¹) more compared to fasting (no change in BDNF concentration) or prolonged activity (slight increase in BDNF concentration, 336 pg L⁻¹ to 390 pg L⁻¹).



Gibbons TD, Cotter JD, Ainslie PN, Abraham WC, Mockett BG, Campbell HA, Jones EMW, Jenkins EJ, Thomas KN. Fasting for 20 h does not affect exercise-induced increases in circulating BDNF in humans. J Physiol. 2023 Jun;601(11):2121-2137. doi: 10.1113/JP283582. Epub 2023 Jan 11. PMID: 36631068

Remember, Exercise!

- 484,169 participants (mean age = 56.5 years; 45.2% men) free of dementia were followed from baseline (2006-2010) through July 30, 2021
- Being sedentary for 5-8 hours each day = increased risk of dementia by 7%,
- **Being sedentary for >8 hours each day increased the risk by 25%.**
- Replacing sedentary time with exercise reduced the risk of dementia (6% less), particularly (18% less) in those with a genetic risk factor for Alzheimer's disease (ApoE)



Sun Y, Chen C, Yu Y, Zhang H, Tan X, Zhang J, Qi L, Lu Y, Wang N. Replacement of leisure-time sedentary behavior with various physical activities and the risk of dementia incidence and mortality: A prospective cohort study. J Sport Health Sci. 2023 May;12(3):287-294. doi: 10.1016/j.jshs.2022.11.005. Epub 2022 Nov 13. PMID: 36379419; PMCID: PMC10199132.



SECRET INGREDIENT

Amazon Has a Donkey Meat Problem

The online retailer sells products meant for human consumption that contain donkey meat. A new lawsuit claims that's illegal in California.

DHRUV MEHROTRA

02.24.23 07:02 AM



A Fifth Less Heart Attacks

- Malmö Diet and Cancer cohort study (recruited between 1991 and 1996) included 23,877 participants aged 44.5-73.6 y (62.5% women) without CVDs and diabetes at baseline
 - 24.9 y of follow-up
 - The multivariable HR (95% CI) for coronary events among participants who had the highest adherence to the EAT-Lancet diet index (≥ 23 points, 8.1%) was 0.80 (0.67, 0.96) compared with those who had the lowest adherence (≤ 13 points, 9.7%)
- = 20% LESS heart attack following this plant-based diet**
- Consistent across genders



Zhang S, Dukuzimana J, Stubbendorff A, Ericson U, Borné Y, Sonestedt E. Adherence to the EAT-Lancet diet and risk of coronary events in the Malmo Diet and Cancer cohort study. *Am J Clin Nutr*. 2023;S0002-9165(23)30193-X.
doi:10.1016/j.ajcnut.2023.02.018

Vegan = No Muscle!?

- 16 individuals, then 22 individuals
- Muscle fiber cross-sectional area (CSA), whole-body lean mass (via DXA), thigh muscle volume (via MRI), muscle strength, and muscle function were determined pre, after 2 and 5 wk, and postintervention
- Young adults who followed a plant-based diet showed **no significant differences** in muscle volume, muscle strength, or muscle fiber size when compared to those who ate an omnivorous diet during training.
- A high-protein vegan diet is as effective for optimal skeletal muscle development during intense trainings as nonvegan diets.



Monteyne AJ, Coelho MO, Murton AJ, et al. Vegan and omnivorous high protein diets support comparable daily myofibrillar protein synthesis rates and skeletal muscle hypertrophy in young adults. *J Nutr.* 2023;S0022-3166(23)12680-0. doi:10.1016/j.tjnut.2023.02.023



Beware Erythritol?



- Untargeted metabolomics studies in patients undergoing cardiac risk assessment (n = 1,157)
- Polyol sweetener levels in the blood, especially erythritol, associated with incident (3 year) risk for major adverse cardiovascular events (MACE; includes death or nonfatal myocardial infarction or stroke)
- At physiological levels, erythritol enhanced platelet reactivity in vitro and thrombosis formation in vivo.
- Then they did a prospective pilot intervention study erythritol ingestion in healthy volunteers (n = 8) induced marked and sustained (>2 d) increases in plasma erythritol levels well above platelet thresholds
- Validation cohorts of stable patients undergoing elective cardiac evaluation confirmed this association (fourth versus first quartile adjusted hazard ratio (95% confidence interval), 1.80 (1.18–2.77))
- **= 20% higher MACE risk**



Witkowski M, Nemet I, Alamri H, Wilcox J, Gupta N, Nimer N, Haghikia A, Li XS, Wu Y, Saha PP, Demuth I, König M, Steinhagen-Thiessen E, Cajka T, Fiehn O, Landmesser U, Tang WHW, Hazen SL. The artificial sweetener erythritol and cardiovascular event risk. Nat Med. 2023 Mar;29(3):710-718. doi: 10.1038/s41591-023-02223-9. Epub 2023 Feb 27. PMID: 36849732, PMCID: PMC10334259.

Osteoporosis

- ~10,000 adults over the age of 60
- Ultrasound of their heel bones
- Those who ate a healthy plant-based diet (higher hPDI) had higher bone mineral density than those eating animal foods.
- Also found a clear dose-response relationship, with healthier, plant-based diets being most protective against osteoporosis.



Hu J, Li Y, Wang Z, et al. Association of plant-based dietary patterns with the risk of osteoporosis in community-dwelling adults over 60 years: a cross-sectional study. *Osteoporos Int*. Published online March 1, 2023. doi:10.1007/s00198-023-06700-2

Want a Bigger Brain?

- ~ 6,000 participants age of 40+
- Those who consumed magnesium-rich foods, like leafy greens and nuts, had **larger brain volumes and better brain health (less white matter lesions)**, particularly when these foods were consumed over several years.
- On average, higher baseline dietary Mg intake was associated with larger brain volumes (gray matter [GM]: 0.001% [SE = 0.0003]; left hippocampus [LHC]: 0.0013% [SE = 0.0006]; and right hippocampus [RHC]: 0.0023% [SE = 0.0006]) in both men and women.
- This effect was **particularly significant among premenopausal women.**



Alateeq K, Walsh EI, Cherbuin N. Dietary magnesium intake is related to larger brain volumes and lower white matter lesions with notable sex differences. Eur J Nutr. 2023 Aug;62(5):2039-2051. doi: 10.1007/s00394-023-03123-x. Epub 2023 Mar 10. PMID: 36899275; PMCID: PMC10349698.



A New Review



nutrients



Review

A Review of Low-Density Lipoprotein-Lowering Diets in the

energy, yields > 10% lowering of LDLc. Foods such as nuts and brans, especially within a prudent, plant-based diet low in saturates complemented by supplements such as phytosterols, have the potential to reduce LDLc further. A combination of such foods has been shown to lower LDLc by 20%. A nutritional approach requires backing from industry to develop and market LDLc-lowering products before pharmacology replaces the diet option. Energetic support from health professionals is vital.

low-density lipoprotein cholesterol (LDLc) concentrations in polygenic hypercholesterolemia. Two effective drugs, statins, and ezetimibe, that lower LDLc > 20% are relatively inexpensive and potential competitors to strict dieting. Biochemical and genomic studies have shown that proprotein convertase subtilisin kexin type 9 (PCSK9) plays an important role in low-density lipoprotein (LDL) and lipid metabolism. Clinical trials have demonstrated that inhibitory monoclonal antibodies of PCSK9 dose-dependently lower LDLc up to 60%, with evidence of both regression and stabilization of coronary atherosclerosis and a reduction in cardiovascular risk. Recent approaches using RNA interference to achieve PCSK9 inhibition are currently undergoing clinical evaluation. The latter presents an attractive option of twice-yearly injections. They are, however, currently expensive and unsuitable for moderate hypercholesterolemia, which is largely due to inappropriate patterns of eating. The best dietary approach, the substitution of saturated fatty acids by polyunsaturated fatty acids at 5% energy, yields > 10% lowering of LDLc. Foods such as nuts and brans, especially within a prudent,

Nestel, P.J.; Mori, T.A. A Review of Low-Density Lipoprotein-Lowering Diets in the Age of Anti-Sense Technology. *Nutrients* 2023, 15, 1249. <https://doi.org/10.3390/nu15051249>

TMAO

- 6,785 adults from the Multi-Ethnic Study of Atherosclerosis
- measured at baseline and year 5
- Higher TMAO levels (per inter-quintile range):
 - **all-cause mortality 12% more!** [hazard ratio (HR): 1.12, 95% (CI): 1.08–1.17]
 - **CVD mortality 9% more!** [HR: 1.09, 95% CI: 1.00–1.09]
 - **Death due to kidney failure 44% more!** [HR: 1.44, 95% CI: 1.25–1.66]



Meng Wang, Xinmin S Li, Zeneng Wang, Marcia C de Oliveira Otto, Rozenn N Lemaitre, Amanda Fretts, Nona Sotoodehnia, Matthew Budoff, Ina Nemet, Joseph A DiDonato, Wai Hong Wilson Tang, Bruce M Psaty, David S Siscovick, Stanley L Hazen, Dariush Mozaffarian, Trimethylamine N-oxide is associated with long-term mortality risk: the multi-ethnic study of atherosclerosis, *European Heart Journal*, Volume 44, Issue 18, 7 May 2023, Pages 1608–1618, <https://doi.org/10.1093/eurheartj/ehad089>



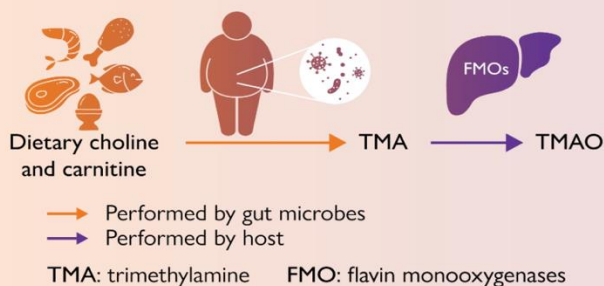
TMAO

Take Home Message

TMAO is positively associated with mortality, especially due to cardiovascular and renal disease in a diverse multi-ethnic population. These findings support the need to test whether lifestyle and pharmacologic interventions to lower TMAO levels may improve health outcomes.

6,785 participants free of clinical CVD at baseline

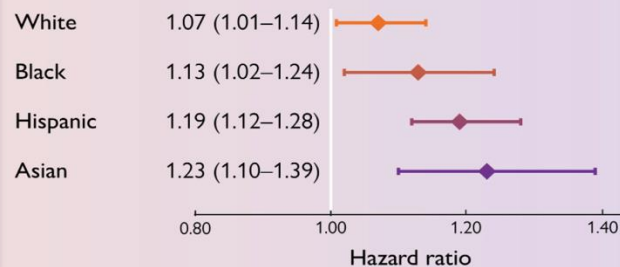
Scheme of TMAO generation



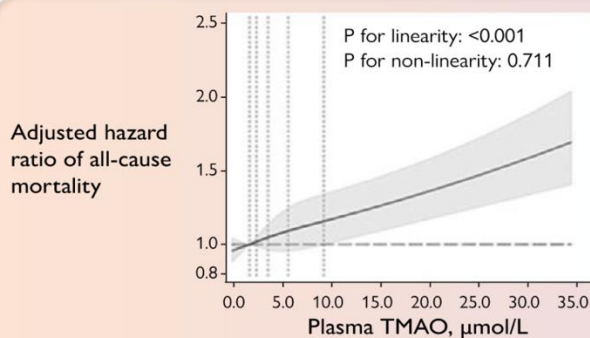
38% White 28% Black 22% Hispanic 12% Asian

All-cause mortality by races/ethnicities

HR (95% CI) per IQR of TMAO (7.5 $\mu\text{mol/L}$)



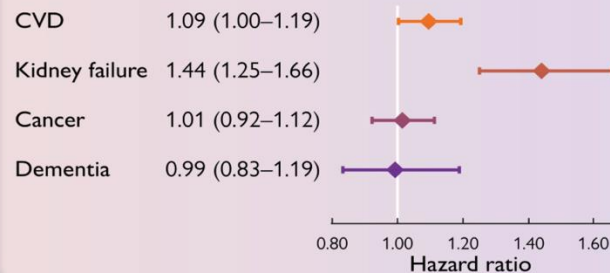
All-cause mortality



Vertical gray lines: 10th, 25th, 50th, 75th, and 90th percentiles of TMAO levels

Cause-specific mortality

HR (95% CI) per IQR of TMAO (7.5 $\mu\text{mol/L}$)



Which Diets Are Best?

- Meta analysis of 40 eligible trials were identified with 35 548 participants across seven named diets (low fat, 18 studies; Mediterranean, 12; very low fat, 6; modified fat, 4; combined low fat and low sodium, 3; Ornish, 3; Pritikin, 1)
- Mediterranean: prevention of all-cause mortality, cardiovascular mortality, stroke, and nonfatal myocardial infarction (odds ratios, 0.72, 0.55, 0.65, and 0.48, respectively) based on moderate-certainty evidence. **= Up to 52% less**
- All other low-fat programs proved superior to minimal intervention for prevention of all-cause mortality and nonfatal myocardial infarction (odds ratios, 0.84 and 0.77, respectively) based on moderate-certainty evidence. **= Up to 33% less**
- The absolute effects were more pronounced for high-risk patients.

Karam G, Agarwal A, Sadeghirad B, Jalink M, Hitchcock CL, Ge L, Kiflen R, Ahmed W, Zea AM, Milenkovic J, Chedrawe MA, Rabassa M, El Dib R, Goldenberg JZ, Guyatt GH, Boyce E, Johnston BC. Comparison of seven popular structured dietary programmes and risk of mortality and major cardiovascular events in patients at increased cardiovascular risk: systematic review and network meta-analysis. *BMJ*. 2023 Mar 29;380:e072003. doi: 10.1136/bmj-2022-072003. PMID: 36990505. PMCID: PMC10053756

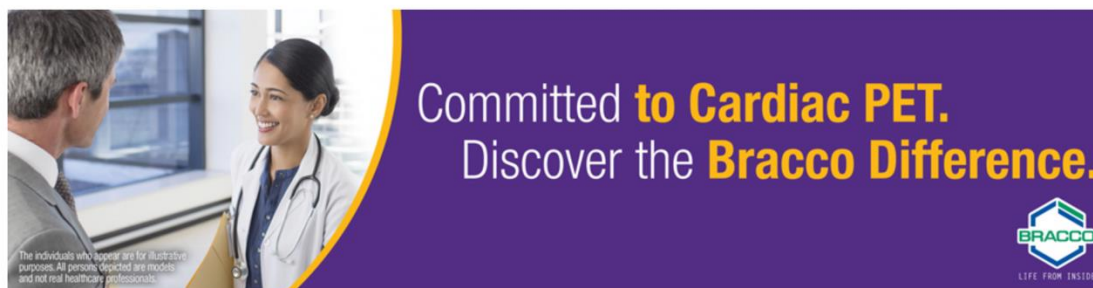


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Plant-based diets—both vegetarian and vegan—linked to lower cholesterol levels, reduced risk of blocked arteries

Michael Walter | May 25, 2023 | Cardiovascular Business | Heart Health



https://cardiovascularbusiness.com/topics/clinical/heart-health/plant-based-vegetarian-vegan-cholesterol-blocked-arteries?utm_source=newsletter&utm_medium=cvb_news



Around the web

RADIOLOGY BUSINESS

Advocates criticize unfunded transparency mandate on imaging providers in recently passed legislation

The Lower Costs, More Transparency Act requires radiologists to publicly list prices for certain "shoppable" services.

HEALTH IMAGING

PBDs Drop Lipids

- 30 trials were included in the meta-analysis from the last 43 years!
- Compared with the omnivorous group, the plant-based diets reduced:
- total cholesterol -0.34 mmol/L (95% confidence interval, -0.44 , -0.23 ; $P = 1 \times 10^{-9}$) = **about 6 mg/dL or a 7% Drop**
- low-density lipoprotein cholesterol -0.30 mmol/L (-0.40 , -0.19 ; $P = 4 \times 10^{-8}$) = **about 6 mg/dL or a 10% Drop**
- apolipoprotein B levels -12.92 mg/dL (-22.63 , -3.20 ; $P = 0.01$) or a **14% Drop**
- The effect sizes were similar across age, continent, duration of study, health status, intervention diet, intervention program, and study design.



Caroline A Koch, Emilie W Kjeldsen, Ruth Frikke-Schmidt,
Vegetarian or vegan diets and blood lipids: a meta-analysis of
randomized trials, *European Heart Journal*, Volume 44, Issue 28,
21 July 2023, Pages 2609–
2622, <https://doi.org/10.1093/eurheartj/ehad211>



NLA Endorses



Highlights

- A healthy dietary pattern improves dyslipidemia and other ASCVD risk factors.
- Combining nutrition interventions can have additive effects for reducing LDL-C.
- Interventions for TG elevation require individualization based on causal factors.
- Dietitian-administered medical nutrition therapy benefits lipid management.

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Penny M. Kris-Etherton PhD, RDN, CLS, FAHA, FASN, FNLA³ ^h #,

Kevin C. Maki PhD, CLS, FACN, FNLA, FTOS^{a i} #  

Show more 

Kirkpatrick CF, Sikand G, Petersen KS, Anderson CAM, Aspry KE, Bolick JP, Kris-Etherton PM, Maki KC. Nutrition interventions for adults with dyslipidemia: A Clinical Perspective from the National Lipid Association. J Clin Lipidol. 2023 Jul-Aug;17(4):428-451. doi: 10.1016/j.jacl.2023.05.099. Epub 2023 Jun 2. PMID: 37271600.

Digestive Cancers

- Data from 3 prospective cohorts, the Nurses' Health Study (1984-2018, 74,496 women aged 65 ± 10.9 years), Nurses' Health Study II (1991-2017, 91,705 women aged 49.3 ± 8.3 years), and Health Professionals Follow up Study (1986-2016, 45,472 men aged 65.4 ± 11.0 years)
- Follow-up of 4,914,985 person-years,
- Per 10-point increase in hPDI score were
- **0.93 (0.89, 0.97) for total digestive system cancer = 11% Less**
- **0.94 (0.89, 0.99) for gastrointestinal tract cancer = 6% Less**
0.89 (0.81, 0.98) for accessory organ cancer = 19%
- **0.68 (0.52, 0.91) for liver cancer = 32% Less**



Kim J, Khil J, Kim H, Keum N, Zhang X, Giovannucci E. Plant-based dietary patterns and the risk of digestive system cancers in 3 large prospective cohort studies. *Eur J Epidemiol.* 2023 Jun;38(6):617-627. doi: 10.1007/s10654-023-01007-2. Epub 2023 Apr 26. PMID: 37101016.



PBDs and Chronic Disease

- 126,394 participants from the UK biobank study recruited between 2006 and 2010 and followed to 2021
- Participants with higher hPDI scores compared to lower scores:
- **16% reduction in risk of death from all causes**
- **7% reduction in cancer risk**
- **8% reduction in cardiovascular disease**
- **16% reduction in ischemic stroke**
- **14% reduction in heart attacks**
- Participants with higher uPDI scores had a 23% increased risk of death, a higher risk of cancer (10%) more risk of dying from cancer (19%) and up to a 23% increased risk of cardiovascular disease.



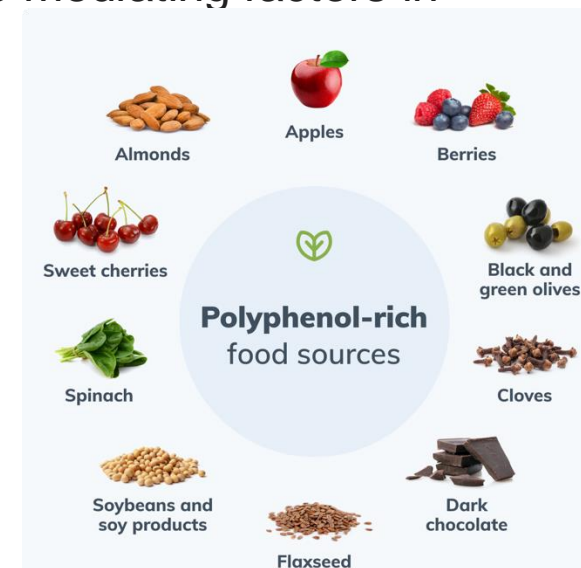
Thompson AS, Tresserra-Rimbau A, Karavasiloglou N, Jennings A, Cantwell M, Hill C, Perez-Cornago A, Bondonno NP, Murphy N, Rohrmann S, Cassidy A, Kühn T. Association of Healthful Plant-based Diet Adherence With Risk of Mortality and Major Chronic Diseases Among Adults in the UK. JAMA Netw Open. 2023 Mar 1;6(3):e234714. doi: 10.1001/jamanetworkopen.2023.4714. PMID: 36976560; PMCID: PMC10051114.

Phytochemicals and Frailty

- A cross-sectional analysis was conducted in 525 healthy participants, aged 41.6 ± 18.3 years.
- Positive associations were found between (poly)phenols and higher adherence to dietary scores
- Higher intake of flavonoids, flavan-3-ols, flavan-3-ol monomers, theaflavins, and hydroxybenzoic acids (stdBeta: -0.31 to -0.29, $p = 0.02$) also showed a negative association with a 10-year ASCVD risk score.
- Higher (poly)phenol intake, particularly flavanone intake, is associated with higher adherence to plant-rich dietary patterns may be mediating factors in the beneficial effects.



Li Y, Xu Y, Ma X, Le Sayec M, Wu H, Dazzan P, Nosarti C, Heiss C, Gibson R, Rodriguez-Mateos A. (Poly)phenol intake, plant-rich dietary patterns and cardiometabolic health: a cross-sectional study. Food Funct. 2023 May 11;14(9):4078-4091. doi: 10.1039/d3fo00019b. PMID: 37097300.



It's the Inflammation!

- Analysis of patients with—or at high risk of—atherosclerotic disease, who were receiving contemporary statins from PROMINENT REDUCE-IT or STRENGTH trials.
- Baseline high-sensitivity CRP
- 31,245 patients were included
- Highest high-sensitivity CRP quartile vs lowest
- MACE (HR 1.31, 95% CI 1.20–1.43; $p < 0.0001$) = **31% MORE**
- CV mortality (2.68, 2.22–3.23; $p < 0.0001$) = **168% MORE**
- All-cause mortality (2.42, 2.12–2.77; $p < 0.0001$) = **142% MORE**
- By contrast, LDL had much lower associations



Ridker PM, Bhatt DL, Pradhan AD, Glynn RJ, MacFadyen JG, Nissen SE; PROMINENT, REDUCE-IT, and STRENGTH Investigators. Inflammation and cholesterol as predictors of cardiovascular events among patients receiving statin therapy: a collaborative analysis of three randomised trials. Lancet. 2023 Apr 15;401(10384):1293-1301. doi: 10.1016/S0140-6736(23)00215-5. Epub 2023 Mar 6. PMID: 36893777.



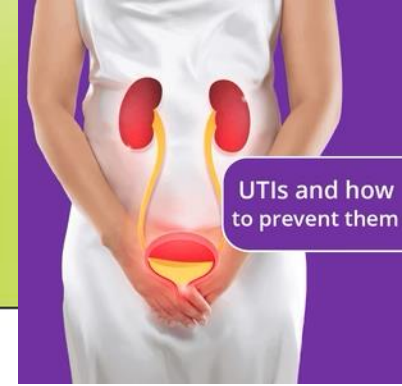
Time for Less Alcohol?



- New meta analysis of 107 cohort studies (4 838 825 participants and 425 564 deaths available)
- No significant reduced risk of all-cause mortality among occasional (>0 to <1.3 g of ethanol per day; relative risk [RR], 0.96; 95% CI, 0.86-1.06; $P = .41$) or low-volume drinkers (1.3-24.0 g per day; RR, 0.93; $P = .07$) compared with lifetime nondrinkers
- Nonsignificantly increased risk of all-cause mortality among drinkers who drank 25 to 44 g per day (RR, 1.05; $P = .28$)
- **Significantly increased risk for drinkers who drank 45 to 64 and 65 or more grams per day (RR, 1.19 and 1.35; $P < .001$) (~4+ drinks/d).**
- **Worse mortality among female drinkers compared with female lifetime nondrinkers (RR, 1.22; $P = .03$).**

Zhao J, Stockwell T, Naimi T, et al. Association between daily alcohol intake and risk of all-cause mortality: a systematic review and meta-analyses. *JAMA Netw Open*. 2023;6(3):e236185-e236185. doi:10.1001/jamanetworkopen.2023.6185

UTIs?



- *E. coli* found in meat may be the cause of 0.5 millions+ urinary tract infections in the United States
- Comparative genomic analysis
- ~8% of *E. coli* urinary tract infections in the United States (or between 480,000 and 640,000) were caused by bacteria strains present in and consumed through meat.



Liu C, Maliha A, Park D, et al. Using source-associated mobile genetic elements to identify zoonotic extraintestinal *E. coli* infections. *One Health*. 2023:100518.
doi:10.1016/j.onehlt.2023.100518

Gallstones?

- Case-control study design; 89 GSD patients with less than one month of diagnosis and 342 age-matched controls were enrolled. Dietary intakes were assessed using a 168-item semi-quantitative validated food frequency questionnaire
- Total fiber intake (highest vs lowest) = **56% reduction in gall stones!**
(OR T_3 vs. T_1 = 0.44, 95% CI: 0.37–0.7, P for trend = 0.015)
- This effect was strongest in older and overweight/obese people



Tehrani AN, Saadati S, Yari Z, Salehpour A, Sadeghi A, Daftari G, Ghorbani M, Hekmatdoost A. Dietary fiber intake and risk of gallstone: a case-control study. BMC Gastroenterol. 2023 Apr 11;23(1):119. doi: 10.1186/s12876-023-02752-0. PMID: 37041462; PMCID: PMC10091554.

Say no to SSBs

- 18 years of health data from 9,252 women and 3,519 men, who had all been diagnosed with type 2 diabetes = 12,771 people with diabetes
- **8% increase in all-cause mortality for each additional sugar-sweetened beverage consumed**
- Dropped by 18% for all-cause mortality and 20% for cardiovascular disease when replacing one drink a day with coffee.
- The risk of premature death dropped by 16% for tea and water.



Ma L, Hu Y, Alperet DJ, Liu G, Malik V, Manson JE, Rimm EB, Hu FB, Sun Q. Beverage consumption and mortality among adults with type 2 diabetes: prospective cohort study. BMJ. 2023 Apr 19;381:e073406. doi: 10.1136/bmj-2022-073406. PMID: 37076174; PMCID: PMC10114037.

Maybe You Saw This?



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Investig

Exclusive: WHO's cancer research agency to say aspartame sweetener a possible carcinogen

By Jennifer Rigby and Richa Naidu

July 13, 2023 12:35 PM MDT · Updated 7 months ago



[1/4] Diet Coke is seen on display at a store in New York City, U.S., June 28, 2023. REUTERS/Shannon Stapleton

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<https://www.reuters.com/business/healthcare-pharmaceuticals/whos-cancer-research-agency-say-aspartame-sweetener-possible-carcinogen-sources-2023-06-29/>

Bye to Fries?

- 140,728 people revealed that frequent fried food consumption, especially fried potato consumption, **is strongly associated with 12% and 7% higher risk of anxiety and depression, respectively**
- Thought related to acrylamide (from fried foods like French fries)



Wang A, Wan X, Zhuang P, Jia W, Ao Y, Liu X, Tian Y, Zhu L, Huang Y, Yao J, Wang B, Wu Y, Xu Z, Wang J, Yao W, Jiao J, Zhang Y. High fried food consumption impacts anxiety and depression due to lipid metabolism disturbance and neuroinflammation. *Proc Natl Acad Sci U S A*. 2023 May 2;120(18):e2221097120. doi: 10.1073/pnas.2221097120. Epub 2023 Apr 24. PMID: 37094155; PMCID: PMC10160962.



And the Red Meat, too!

- Large meta-analysis
- 43 observational studies ($N = 4\,462\,810$, 61.7% women) for CVD and 27 observational studies ($N = 1\,760\,774$, 64.4% women) for diabetes were included
- Red meat consumption and CVD:
- **11% More CVD** HR 1.11, 95% CI (per 100 g/day increment)
- **26% More CVD** HR 1.26, 95% CI for processed red meat (per 50 g/day increment)



Wenming Shi, Xin Huang, C Mary Schooling, Jie V Zhao, Red meat consumption, cardiovascular diseases, and diabetes: a systematic review and meta-analysis, *European Heart Journal*, Volume 44, Issue 28, 21 July 2023, Pages 2626–2635, <https://doi.org/10.1093/eurheartj/ehad336>

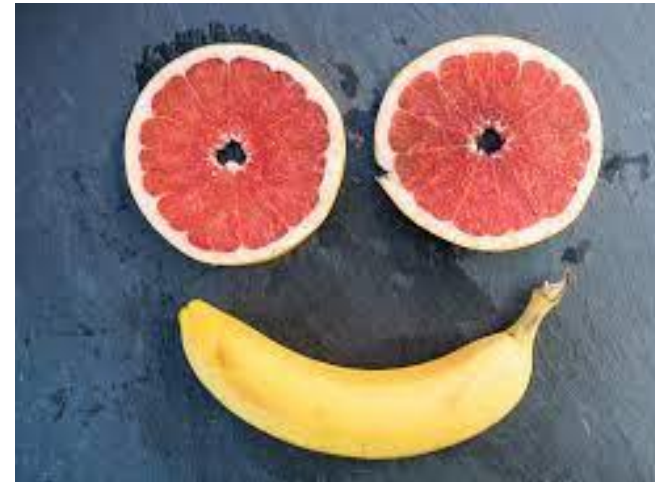


Vanquish Depression

- 5,849 adults from the 2014 and 2016 Korea National Health and Nutrition Examination Surveys
- modified alternate Mediterranean diet score (mMED)
- Individuals with higher mMED were **42-73% less likely to report depression** compared to individuals with the lowest mMED
- Women with the highest adherence to a Mediterranean diet had 71% reduced odds of depression, while men with the highest adherence had 79% reduced odds.



Hwang YG, Pae C, Lee SH, Yook KH, Park CI. Relationship between Mediterranean diet and depression in South Korea: the Korea National Health and Nutrition Examination Survey. Front Nutr. 2023 Jul 5;10:1219743. doi: 10.3389/fnut.2023.1219743. PMID: 37476401; PMCID: PMC10354261.



Flax for ALS?

- Fatty acid analyses were conducted in 449 participants
- Mean age of these participants at baseline was 57.5 years, and 293 (65.3%) were men
- Higher ALA levels were associated with lower risk of death (age-adjusted and sex-adjusted hazard ratio comparing highest vs lowest quartile 0.50, 95% CI 0.29-0.86, p -trend = 0.041) = **50% Less Death!**
- Also higher joint rank test score (difference in score according to 1 SD increase 10.7, 95% CI 0.2-21.1, p = 0.045) = **slower functional decline**



Bjornevik K, Cortese M, Furtado JD, Paganoni S, Schwarzschild MA, Cudkovic ME, Ascherio A. Association of Polyunsaturated Fatty Acids and Clinical Progression in Patients With ALS: Post Hoc Analysis of the EMPOWER Trial. *Neurology*. 2023 Aug 15;101(7):e690-e698. doi: 10.1212/WNL.0000000000207485. Epub 2023 Jun 21. PMID: 37344230; PMCID: PMC10437021.

Breathe Easier



- Plant-centered diet quality was scored using the validated A Priori Diet Quality Score (APDQS) in adults from CARDIA study
- Including forced expiratory volume in 1 second (FEV 1) and functional vital capacity (FVC), measured at years 0, 2, 5, 10, 20, and 30
- 3,787 patients aged 18-30 in 1985-86 and followed for 30 years
- Individuals in the lowest APDQS quintile had:
- Declines in FEV 1 that were 1.6 ml/year greater than individuals in the highest quintile (33.4 vs. 35.0 ml/year, $p=0.009$)
- Declines in FVC that were 2.4 ml/year greater than those in the highest quintile (37.0 vs 34.6 ml/year, $p<0.001$)
- **= Slower lung function decline when eating a PBD**



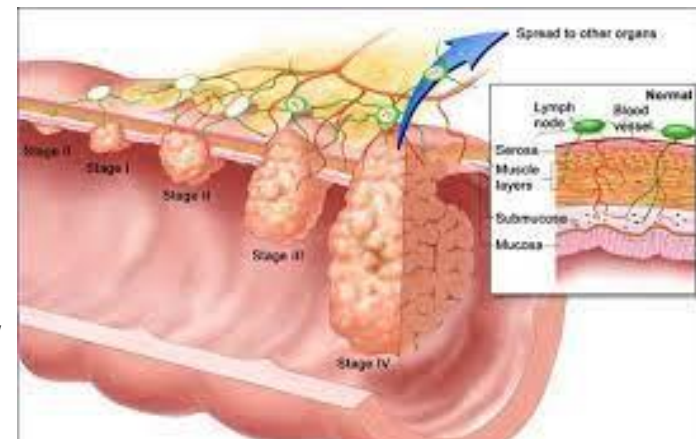
Wharton R, et al. Associations of a plant centered diet and lung function decline across early to mid-adulthood: The Cardia Lung study. Presented at: American Thoracic Society International Conference; May 19-24, 2023; Washington, D.C.

Colorectal Cancer

- 135 161 participants (median [range] age, 62 [55-78] years; 67 643 [50.0%] female)
- Overweight BMI in early adulthood = 23% More colorectal cancer
(hazard ratio [HR], 1.23; 95% CI, 1.10-1.37)
- Overweight BMI in middle adulthood = 23% More colorectal cancer
(HR, 1.23; 95% CI, 1.13-1.34)
- Overweight later adulthood = 21% More colorectal cancer
(HR, 1.21; 95% CI, 1.10-1.32)
- Obese BMI in middle adulthood = 55% More colorectal cancer
(HR, 1.55; 95% CI, 1.38-1.75)
- Obese BMI in later adulthood = 39% More colorectal cancer
(HR, 1.39; 95% CI, 1.25-1.54)



Loomans-Kropp HA, Umar A. Analysis of Body Mass Index in Early and Middle Adulthood and Estimated Risk of Gastrointestinal Cancer. JAMA Netw Open. 2023 May 1;6(5):e2310002. doi: 10.1001/jamanetworkopen.2023.10002. PMID: 37163267; PMCID: PMC10173015.



Maybe with Keto?

- 61,321 Chinese in Singapore who were 45 to 74 years old
- 19.5 years of follow-up
- Up to **27% more colorectal cancer** risk when comparing the lowest carb most animal-based higher fat diets to the least



Yu YC, Paragomi P, Jin A, Wang R, Schoen RE, Koh WP, Yuan JM, Luu HN. Low-Carbohydrate Diet Score and the Risk of Colorectal Cancer: Findings from the Singapore Chinese Health Study. *Cancer Epidemiol Biomarkers Prev.* 2023 Jun 1;32(6):802-808. doi: 10.1158/1055-9965.EPI-22-0683. PMID: 36944231; PMCID: PMC10239354.

Healthy Way to Low Carb?

- Ten studies, with 421022 participants, were included in the analysis
- A low-carb **plant-based** diet **reduced all-cause mortality by 13% with each 5-point increase in plant-based low-carb diet score reducing mortality by 4%.**
- Animal-based low-carb diets were associated with a **14% and 16% increased risk** of dying from cancer, respectively.
- The plant-based low-carb diet did not impact risk of cancer death.
- diets with a moderate carbohydrate content were associated with the lowest risk of all-cause and CVD mortality



Ghorbani Z, Kazemi A, Shoaibinobarian N, Taylor K, Noormohammadi M. Overall, plant-based, or animal-based low carbohydrate diets and all-cause and cause-specific mortality: A systematic review and dose-response meta-analysis of prospective cohort studies. Ageing Res Rev. 2023 Sep;90:101997. doi: 10.1016/j.arr.2023.101997. Epub 2023 Jul 5. PMID: 37419282.



It Works!

- 20 RCTs involving 1878 participants (range of mean age, 28-64 years) were included, most of which were highest risk patients
- **LDL-C, blood sugar, and body weight all improved more on vegetarian/vegan diets** than they did simply by using standard therapy for cardiovascular disease
- Dietary impacts went beyond standard therapy



Wang T, Kroeger CM, Cassidy S, Mitra S, Ribeiro RV, Jose S, Masedunskas A, Senior AM, Fontana L. Vegetarian Dietary Patterns and Cardiometabolic Risk in People With or at High Risk of Cardiovascular Disease: A Systematic Review and Meta-analysis. JAMA Netw Open. 2023 Jul 3;6(7):e2325658. doi: 10.1001/jamanetworkopen.2023.25658. PMID: 37490288; PMCID: PMC10369207.

Sleep Better, with Plants!

- Diets high in saturated fat in individuals have been associated with daytime sleepiness
- Small study of 14 patients
- 21 days of WFPB Diet
- A mean **decrease** of 3.8 points (SD = 3.3, $p = 0.003$) on the Epworth Sleepiness Scale (ESS) after switching from a standard Western diet to a WFPB diet



Patel K, Lawson M, Cheung J. Whole-food plant-based diet reduces daytime sleepiness in patients with OSA. *Sleep Med.* 2023 Jul;107:327-329. doi: 10.1016/j.sleep.2023.05.007. Epub 2023 May 12. PMID: 37285791.



OA: Plants for Joints?

- 16-week lifestyle program based on a whole food plant-based diet, physical activity, and stress management in the “Plants for Joints” randomized controlled trial.
- 66 people randomized, 64 completed. Participants (84% female) had a mean (SD) age of 63 (6) years and body mass index of 33 (5) kg/m²
- At 16 weeks, the intervention group (n = 32) had a mean 11-point larger improvement in WOMAC-score (95% CI 6-16; p = 0.0001) compared to the control group.
[Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC)]
- Also lost more weight (-5 kg), fat mass (-4 kg), and waist circumference (-6 cm) compared to the control group



Walrabenstein W, Wagenaar CA, van de Put M, van der Leeden M, Gerritsen M, Twisk JWR, van der Esch M, van Middendorp H, Weijs PJM, Roorda LD, van Schaardenburg D. A multidisciplinary lifestyle program for metabolic syndrome-associated osteoarthritis: the "Plants for Joints" randomized controlled trial. *Osteoarthritis Cartilage*. 2023 Nov;31(11):1491-1500. doi: 10.1016/j.joca.2023.05.014. Epub 2023 Jun 14. PMID: 37328047.



Even The Times Says So

<https://www.nytimes.com/2023/05/04/well/eat/ultraprocessed-food-mental-health.html?smid=nytcore-ios-share>

The Link Between Highly Processed Foods and Brain Health

Eating packaged foods like cereal and frozen meals has been associated with anxiety, depression and cognitive decline. Scientists are still piecing together why.

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A Positive For Red Wine?

- A randomized, crossover, controlled trial involving 42 men (average age, 60 y) with documented CAD comparing 3-wk red wine consumption (250 mL/d, 5 d/wk) with an equal period of alcohol abstinence, both preceded by a 2-wk washout period.
- Gut microbiota analysis with rRNA high-throughput sequencing.
- TMAO no changes.
- Remodeling of the gut microbiota, with a difference in β diversity and predominance of Parasutterella, Ruminococcaceae, several Bacteroides species, and Prevotella.
- Changes in metabolites after RW consumption, consistent with improved redox homeostasis.



Haas EA, Saad MJA, Santos A, Vitulo N, Lemos WJF, Martins AMA, Picossi CRC, Favarato D, Gaspar RS, Magro DO, Libby P, Laurindo FRM, Da Luz PL; WineFlora Study. A red wine intervention does not modify plasma trimethylamine N-oxide but is associated with broad shifts in the plasma metabolome and gut microbiota composition. Am J Clin Nutr. 2022 Dec 19;116(6):1515-1529. doi: 10.1093/ajcn/nqac286. PMID: 36205549; PMCID: PMC9761755.

Do It For the Environment!

- 2x-3x number of extreme heat days by mid century
- Each of these extra-hot days per month carried an added 9.7 CV deaths per 10 million elderly adults age 65 or older and an added 0.3 CV deaths per 10 million nonelderly adults.
- Overall effect could be up to 5x number of CV deaths



Khatana SA. Projected number of cardiovascular deaths associated with extreme heat in the contiguous United States by mid-century (2036-2065). To be presented at: ACC/WCC 2023. March 6, 2023. New Orleans, LA.
<https://www.abstractsonline.com/pp8/#!/10674/presentation/10840>

Environmental Health



- 55,504 vegans, vegetarians, fish-eaters and meat-eaters with food-level data on greenhouse gas emissions, land use, water use, eutrophication risk and potential biodiversity loss from a review of 570 life-cycle assessments covering more than 38,000 farms in 119 countries
- Comparing to a meat-based diet, a vegan diet results in only 25% of greenhouse gas emissions, 25% of land use, 46% of water use and 34% of biodiversity loss
- Authors conclude: “Despite substantial variation due to where and how food is produced, the relationship between environmental impact and animal-based food consumption is clear and should prompt the reduction of the latter.”



Scarborough P, Clark M, Cobiack L, Papier K, Knuppel A, Lynch J, Harrington R, Key T, Springmann M. Vegans, vegetarians, fish-eaters and meat-eaters in the UK show discrepant environmental impacts. *Nat Food*. 2023 Jul;4(7):565-574. doi: 10.1038/s43016-023-00795-w. Epub 2023 Jul 20. PMID: 37474804; PMCID: PMC10365988.

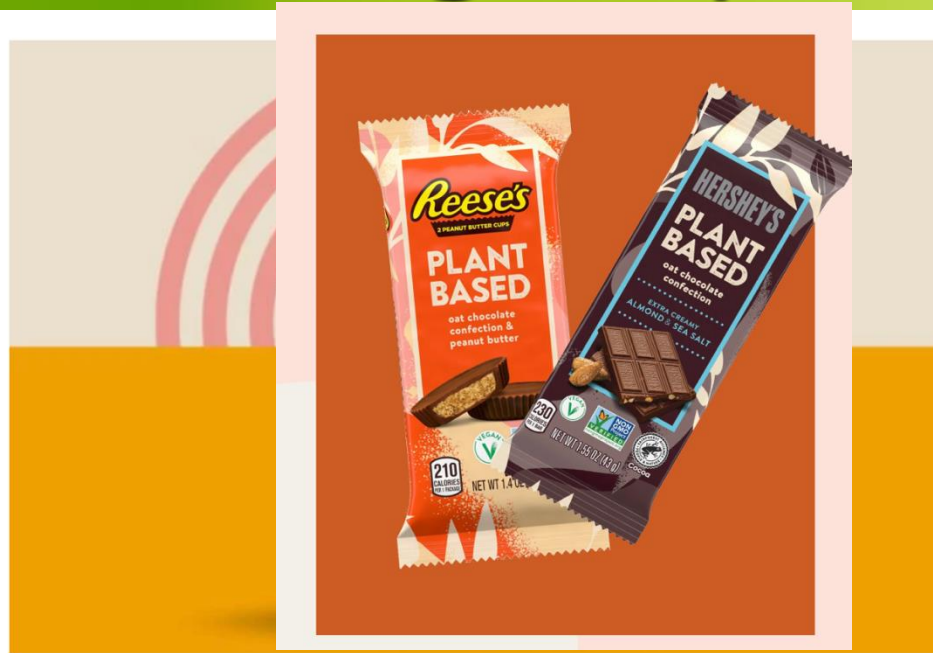
Do it For the Environment

- Life Cycle Assessment, a method to evaluate the environmental footprint of a product
- Made on the basis of a theoretical one-week 2000 kcal/day diet
- A **vegan diet had 44% less total environmental impact** when compared to the Mediterranean diet
- Med diet = content of animal products was low (with 10.6% of the total diet calories)
- Authors: “Even a **minimal-to-moderate content of animal foods has a consistent impact on the environmental footprint** of a diet, and their reduction can elicit significant ecological benefits.”



Filippin D, Sarni AR, Rizzo G, Baroni L. Environmental Impact of Two Plant-Based, Isocaloric and Isoproteic Diets: The Vegan Diet vs. the Mediterranean Diet. Int J Environ Res Public Health. 2023 Feb 21;20(5):3797. doi: 10.3390/ijerph20053797. PMID: 36900805; PMCID: PMC10001513.

Do Pigs Fly?



Hershey's Launches Vegan Version Of Iconic Reese's Peanut Butter Cups

Vegans in the US will be delighted to learn that they can enjoy iconic Reese's Peanut Butter Cups once again.

Hershey's announced the release of a dairy-free version of the product, alongside an Extra Creamy with Almonds and Sea Salt chocolate bar.

"We are excited to introduce these delicious, plant-based options," said Teal Liu, brand manager of Better For You at The Hershey Company. "Our purpose is to create more moments of goodness for consumers. Those moments are now more accessible for chocolate lovers looking for plant-based alternatives."



European Veg Out



Animal Meat And Milk Sales Drop In Europe As Vegan Versions Hit Record Highs

The Good Food Institute Europe (GFI Europe) reports that sales of plant-based foods across 13 European nations amounted to €5.7 billion in 2022.

The figure represents a 22 percent increase since 2020, with vegan meat alternatives being a major contributor. Alongside, dairy-free cheese and vegan seafood products saw significant growth from increased consumer demand.

Comparatively, some animal protein categories experienced reduced sales figures.

Countries included in the sales analyses were Austria, Belgium, Denmark, France, Germany, Italy, the Netherlands, Poland, Portugal, Romania, Spain, Sweden, and the UK.

<https://plantbasednews.org/news/economics/europe-vegan-food-sales-meat-products/>



The Evidence Is In...

Cost analysis of diets, sample size of 12 who had diabetes; 3 day food records for 7 days of each diet

>> The baseline, DASH, and WFPB diets, as consumed, cost

- Baseline: \$15.72/d (95% CI; \$13.91, \$17.53)
- DASH: \$12.74/d (\$11.23, \$14.25)
- **WFPB: \$9.78/d (\$7.97, \$11.59)**

When adjusted to an 1800 kcal/d intake:

- Baseline: \$15.69/d (\$13.87, \$17.52)
- DASH: \$14.92/d (\$13.59, \$16.26)
- **WFPB: \$11.96/d (\$10.14, \$13.78)**



Campbell EK, Taillie L, Blanchard LM, Wixom N, Harrington DK, Peterson DR, Wittlin SD, Campbell TM. Post hoc analysis of food costs associated with Dietary Approaches to Stop Hypertension diet, whole food, plant-based diet, and typical baseline diet of individuals with insulin-treated type 2 diabetes mellitus in a nonrandomized crossover trial with meals provided. Am J Clin Nutr. 2023 Dec 30:S0002-9165(23)66356-7. doi: 10.1016/j.ajcnut.2023.12.023. Epub ahead of print. PMID: 38160802.

The Evidence Is In...

When approximated ingredient-only costs of restaurants:

- Baseline: \$11.01 (\$9.53, \$12.49)
- DASH diets \$11.81 (\$10.44, \$13.18)
- WFPB diet \$8.83 (\$7.35, \$10.31)

→ Is it time to make the FARMacy dispense?



This Will Convince You

- 22 produce prescription locations in 12 US states from 2014 to 2020.
- 3881 individuals (2064 adults aged 18+ years and 1817 children aged 2–17 years) recruited from clinics serving low-income neighborhoods
- Programs provided financial incentives to purchase F&V
- @ 6.0 months, produce intake increased by 0.85 (95% CI, 0.68–1.02) and 0.26 (95% CI, 0.06–0.45) cups per day among adults and children
- Food insecurity dropped **by one-third** (odds ratio, 0.63 [0.52–0.76])
- Improving 1 level in self-reported health status **increased by 62%** for adults (odds ratio, 1.62 [1.30–2.02]) and by nearly **2.5 TIMES for children** (odds ratio, 2.37 [1.70–3.31]).
- **A1c declined by -0.29%** points (-0.42 to -0.16);
- Systolic and diastolic **blood pressures declined by -8.38 mm Hg** (-10.13 to -6.62) and -4.94 mm Hg (-5.96 to -3.92)
- **BMI decreased by -0.36 kg/m²** (-0.64 to -0.09).



Hager K, Du M, Li Z, Mozaffarian D, Chui K, Shi P, Ling B, Cash SB, Foltz SC, Zhang FF. Impact of Produce Prescriptions on Diet, Food Security, and Cardiometabolic Health Outcomes: A Multisite Evaluation of 9 Produce Prescription Programs in the United States. *Circ Cardiovasc Qual Outcomes*. 2023 Sep;16(9):e009520. doi: 10.1161/CIRCOUTCOMES.122.009520. Epub 2023 Aug 29. PMID: 37641928; PMCID: PMC10529680.



> 2/3 Diet-Related CV Deaths

- > Half a million Chinese
- 2018, the nationwide mortality rate attributable to diet was found to be 77.9 (95% UI, 77.5–78.1) per 100,000 population for ischemic heart disease
- **> two-thirds of diet-related cardiovascular deaths can be attributed to low intakes of whole grains, fruits, vegetables, and nuts**
- A low intake of fruit was the leading dietary risk factor for stroke, followed by a low intake of whole grains and vegetables
- Suboptimal diet was responsible for 16.0 million disability-adjusted life years (DALYs) for stroke and 13.9 million DALYs for ischemic heart disease
- → Rates are increasing



Fang Y, Xia J, Lian Y, Zhang M, Kang Y, Zhao Z, Wang L, Yin P, Wang Z, Ye C, Zhou M, He Y. The burden of cardiovascular disease attributable to dietary risk factors in the provinces of China, 2002-2018: a nationwide population-based study. *Lancet Reg Health West Pac.* 2023 May 8;37:100784. doi: 10.1016/j.lanwpc.2023.100784. PMID: 37693878; PMCID: PMC10485670.

Yoga for HF

- A prospective non-randomized study was conducted at a tertiary care center including seventy-five HF patients with NYHA class III or less who underwent coronary intervention, revascularization, or device therapy within the past six months to one year and continuing guideline-directed optimal medical therapy (GDMT)
- 35 participants were part of the Interventional Group (IG), and 40 were in the Non-Interventional Group (Non-IG). The IG received yoga therapy and GDMT, while the non-IG were only under standard GDMT.
- **Echocardiographic parameters of the IG and non-IG from baseline to six months and one year showed a significant improvement (p-value of <0.05).**
- **The functional classes was assessed after follow-up, and a p-value <0.05 showed a substantial improvement in the IG.**



Prabhu S, Annapoorna K, Devasia T, Paramasivam G, Nayak K, Shetty L, Singh A, Samanth J. Yoga as an adjuvant therapy in heart failure patients on optimal medical management analysed using echocardiographic parameters. *Explore (NY)*. 2023 Sep-Oct;19(5):736-742. doi: 10.1016/j.explore.2023.02.009. Epub 2023 Feb 23. PMID: 36878773.



Just Remember 5 Things

- 1,518,028 participants (54.1% of whom were women) with a median age of 54.4 years
 1. Body-mass index
 2. Systolic blood pressure
 3. Non-high-density lipoprotein cholesterol,
 4. Smoking
 5. Diabetes
- All 5: aggregate global population-attributable fraction of the 10-year incidence of cardiovascular disease was 57.2% for women and 52.6% for men
- **“22.2% and 19.1% of deaths among women and men, respectively, may be attributable to these 5 modifiable risk factors.”**



Global Cardiovascular Risk Consortium; Magnussen C, et al, Blankenberg S. Global Effect of Modifiable Risk Factors on Cardiovascular Disease and Mortality. N Engl J Med. 2023 Oct 5;389(14):1273-1285. doi: 10.1056/NEJMoa2206916. Epub 2023 Aug 26. PMID: 37632466; PMCID: PMC10589462.

Maybe Smarter Than We Thought



'Truly Remarkable': Study Finds Fish Recognize Themselves, Hinting At Self-Awareness

A new study has found that some fish are able to recognize themselves in pictures and reflective surfaces, which researchers say could indicate self-awareness.

Scientists from Japan's Osaka Metropolitan University (OMU) studied the cleaner fish species. They used the "mirror test" to conduct the research. Animals were shown a reflection of themselves before having a mark drawn on their bodies. They were then placed in front of the mirror again, and scientists observed if the animal attempted to touch the mark.

In this study, most of the fish did touch the mark, having apparently identified it in their reflections. Overall, the test fish had a 94 percent pass rate with 17 out of 18 acing the mirror test.

Moreover, the fish that passed the mirror test were shown photographs of themselves and again appeared to identify their face. In total, 10



It's Showing Up Everywhere

ARTICLE IN PRESS

JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY

VOL. ■, NO. ■, 2024

- Poor nutrition may result in worse HF outcomes. In line with the 2019 ACC/AHA Primary Prevention Guidelines, a low salt, plant-forward diet has robust evidence to aid in the management of HFrEF patients, including their common morbidities.²³⁵

With Reduced Ejection Fraction

A Report of the American College of Cardiology Solution Set Oversight Committee

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With The Power of Plants...

Q4 2023

Intermountain Health outcomes*

National outcomes**

	Baseline	9 weeks	Change	Baseline	9 weeks	Change
Weight Loss	194.5	187.7	-3.5%	198.9	189.9	-4.5%
BMI	30.0	28.9	-3.6%	31.2	29.8	-4.5%
Total Cholesterol	160.2	132.4	-17.4%	162.9	138.3	-15.1%
LDL Cholesterol	86.5	62.9	-27.3%	89.0	70.2	-21.2%
HDL Cholesterol	46.4	43.4	-6.5%	47.7	44.4	-6.9%
Triglycerides	154.7	136.0	-12.1%	142.4	125.7	-11.7%
Systolic Blood Pressure	125.3	119.9	-4.3%	127.1	121.4	-4.5%
Diastolic Blood Pressure	75.7	70.9	-6.4%	73.9	69.9	-5.4%
HbA1c	6.9	6.4	-6.0%	6.6	6.2	-5.9%
Depression Score (CESD)	13.3	7.0	-46.9%	11.1	5.8	-47.9%
Exercise Capacity (Mets)	3.1	4.8	+52.1%	3.7	5.4	+44.5%

In addition to these results, many participants reduced or discontinued medications to lower BP, lipids, and blood sugar with approval of their physicians.

Updated January 2024

* N = 291, **N = 14,447 participants having pre- and post-program data



Success

Low fat, 100% whole grain, minimally processed, whole food, plant-based diet



Geniuses Agree...

“Nothing will benefit human health and increase our chances of survival for life on Earth as much as the evolution to a vegetarian diet.” – Albert Einstein



Denver, CO: Metro Area

Walk Locations

Why Walk?

FAQs

Simple walking improves your health. Just 30 minutes of walking a day can reduce your risk of heart disease, improve blood pressure and blood sugar, elevate mood, and reduce risk of osteoporosis, cancer, and diabetes. Join your doctors on a monthly walk to improve your health, learn about important health topics, and meet new friends interested in improving their health with you. You'll get to spend time with your physicians, get to know them, and ask medical questions in an informal, relaxed, and fun way!

Lead Physicians:

[Dr. Andrew Freeman](#)

Dr. Grace Alfonsi

Dr. Lindsay Regehr

Upcoming Walks:

www.njhealth.org/walkwithadoc

Visit our Meetup page:



Join us! It's open to anyone – we'll look for you at our next Walk with a Doc event!

Transitioning to Plant-Based Eating Virtual Support Group: Explore Health from your Food!

Make an Appointment

Patient Education

Find Faculty

Details

The Transitioning to Plant-Based Eating Support Group provides education and support to those wishing to eat more plant-based. Whether you need to adopt this lifestyle due to health conditions such as high blood pressure, high cholesterol, osteoporosis, being overweight, etc., or you want to eat plant-based for other reasons, this group can help. Interact with experts who can help you get on a path that is sustainable, creates healthy change and handles challenges that may arise. Be with people who share your interest and who want to hear about your successes and help with roadblocks.



All are welcome for these FREE events!

For more information, please contact:

Kelly LeGros Strickler, MS

legros.strickler@gmail.com

2021 Schedule: Meets the 3rd Saturday each month starting Jan 21st, 2023, 10:00 a.m. - 11:30 a.m.

Zoom Meeting Information: Please contact Kelly LeGros Strickler, MS, at legros.strickler@gmail.com

Dates: Meets the 3rd Saturday of every month, 10:00 a.m. - 11:30 a.m.

Class Days: Saturday

Convinced?

- Forks Over Knives
- The China Study
- The Starch Solution
- Diet for a New America
- Planeat
- Eating You Alive
- What the Health
- Earthlings

