

Three bright green apples are arranged in a cluster, with one in the foreground and two behind it. The background is white, and the bottom of the slide has a green gradient.

The Year in Plants 2022: How the Latest Science Makes Plant-Based Diets The Key To Success in Human Health

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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.



PLEASE NOTE

We've moved a few books around.

Travel is now in the Fantasy section, sci-fi in current affairs and Epidemiology is in self help.

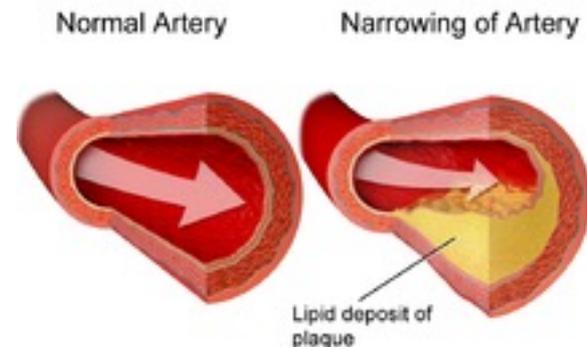


An Oldie but Goodie

Having coronary disease does NOT necessitate the need for stents or CABG

“We conclude that such ST-segment depression is not associated with a poor prognosis. There is rarely a need to resort to cardiac surgery; medical management is highly successful and associated with a low mortality.”

212 man study; mortality = 1.4%



November 5, 1981

N Engl J Med 1981; 305:1111-1116

DOI: 10.1056/NEJM198111053051903

<https://www.nejm.org/doi/full/10.1056/NEJM198111053051903?c>

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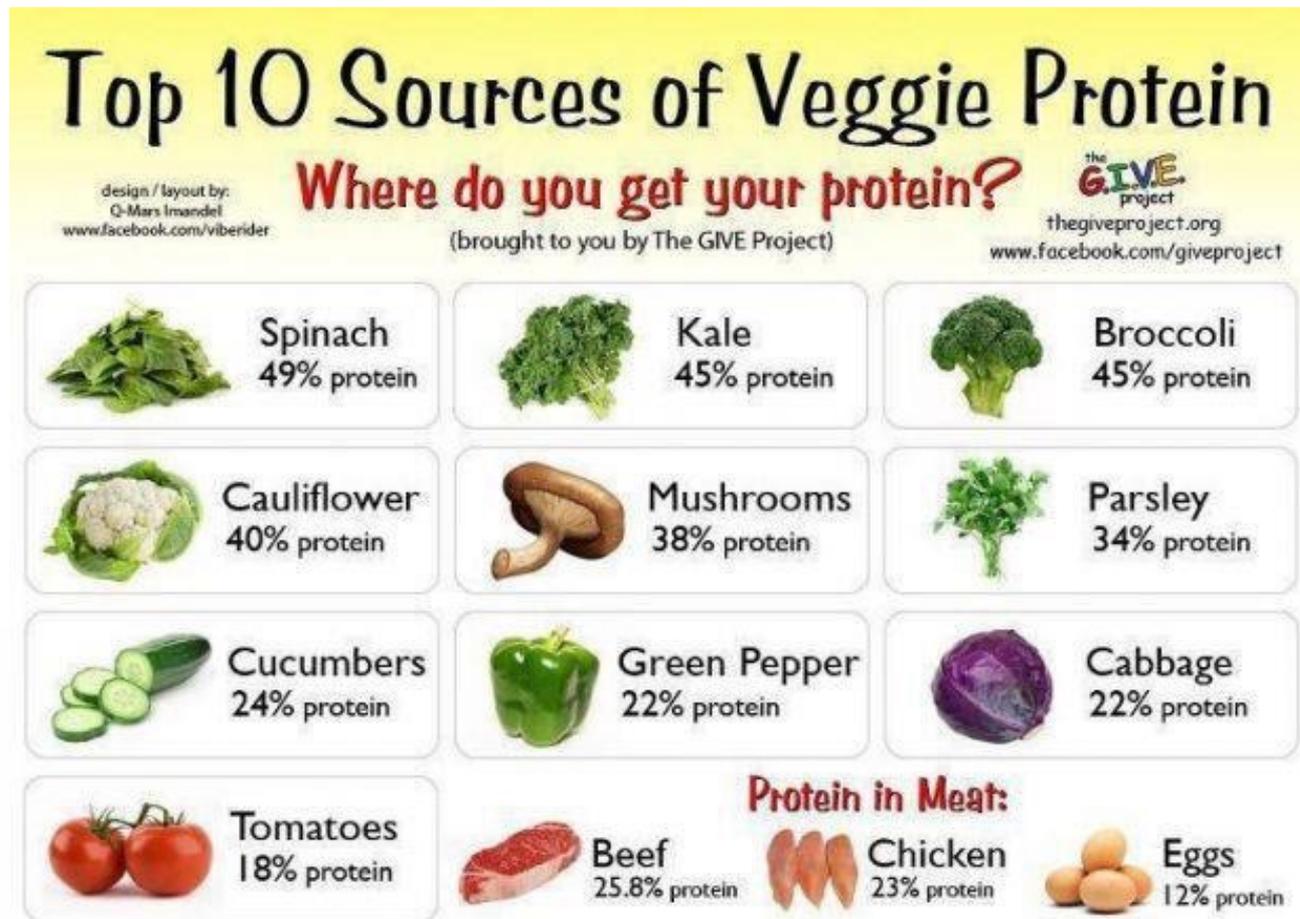
E3OSodB9r6iKPQYzKNEimyjPb6VIR4WDDNqs0HtWduFT2z42

S7NI-Hr2ZnwgQ



Getting Enough Protein?

- Yes, yes, yes!

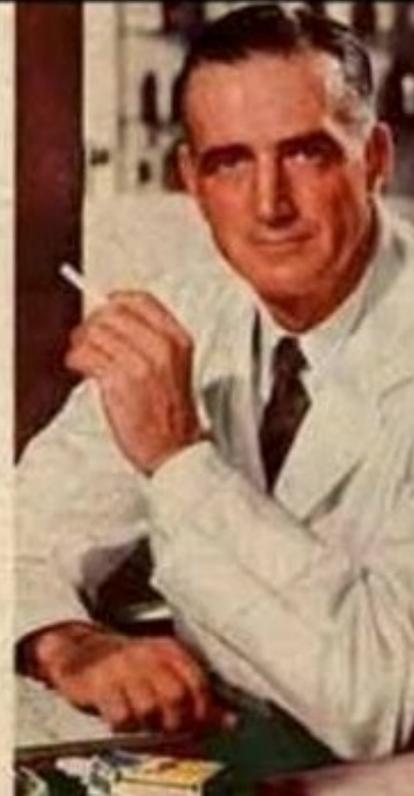


Really?

**"MY DOCTOR SAID
I NEED TO EAT MEAT"**

According to repeated nationwide surveys,

**More Doctors
Smoke **CAMELS**
than any other
cigarette!**



Doctors in every
branch of medicine

You'll enjoy Camels for the same reasons
so many doctors enjoy them. Camels have
cool, cool muzzles, pack after pack, and



Stats from 2021

- From NHANES 2015 -2018 data
- Prevalence of CVD (comprising CHD, HF, stroke, and hypertension) in **adults ≥ 20 years of age is 49.2%** overall (126.9 million in 2018) and increases with age in both males and females.
- CVD prevalence excluding hypertension (CHD, HF, and stroke only) is 9.3% overall (26.1 million in 2018).

Virani SS, et al. Heart disease and stroke statistics—2021 update: a report from the American Heart Association [published online ahead of print January 27, 2021]. *Circulation*. doi:

10.1161/CIR.0000000000000950

More Sad News

- Cardiovascular disease (CVD), listed as the underlying cause of death, accounted for 868,662 deaths in the US in 2017.
- **CVD claims more lives each year than all forms of cancer and Chronic Lower Respiratory Disease (CLRD) combined.**
- Between 2015 and 2018, 126.9 million American adults had some form of CVD. Between 2016 to 2017, direct and indirect costs of **total CVD were \$363.4 billion** (\$216.0 billion in direct costs and \$147.4 billion in lost productivity/mortality).



Virani SS, et al. Heart disease and stroke statistics—2021 update: a report from the American Heart Association [published online ahead of print January 27, 2021]. *Circulation*. doi:

10.1161/CIR.0000000000000950

The Truth Hurts!



- In 2015 to 2018, **58.8% of non-Hispanic (NH) Black females and 60.1% of NH Black males had some form of CVD.**
- In 2018, **Coronary Heart Disease (CHD) was the leading cause (42.1%) of deaths attributable to CVD in the US**, followed by stroke (17.0%), high blood pressure (11.0%), heart failure (9.6%), diseases of the arteries (2.9%), and other CVD (17.4%).
- CVD is the leading global cause of death and accounted for approximately 18.6 million deaths in 2019.
- **CVD and stroke accounted for 13% of total health expenditures in 2014 to 2015. This is more than any major diagnostic group.**



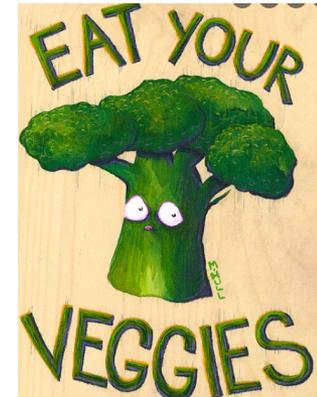
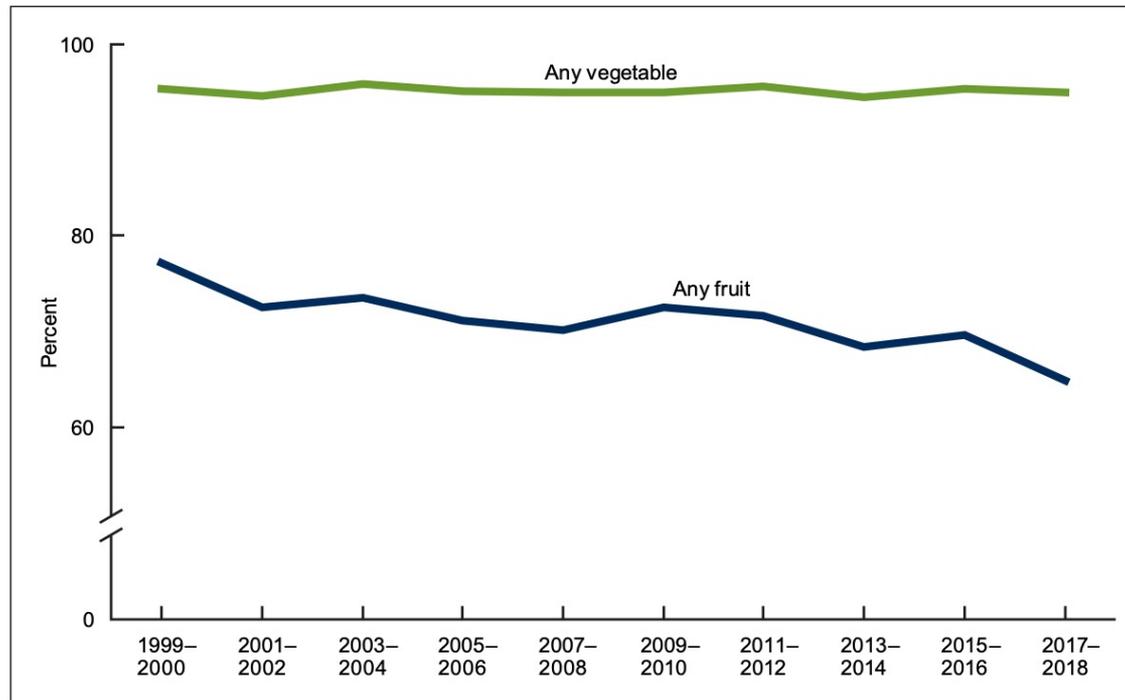
Virani SS, et al. Heart disease and stroke statistics—2021 update: a report from the American Heart Association [published online ahead of print January 27, 2021]. *Circulation*. doi:

10.1161/CIR.0000000000000950

Not Following Mom's Advice

- A full 95% of U.S. adults said they ate some amount of vegetables on any given day. On the other hand, only about 2/3 said the same of fruit -- down significantly from 20 years ago.

Figure 5. Percentage of adults aged 20 and over who consumed any fruit or vegetables on a given day: United States, 1999–2000 through 2017–2018



¹Significant decreasing linear trend.

NOTES: Percentages are based on Food Patterns Equivalents Database food groups. Access data table for Figure 5 at:

<https://www.cdc.gov/nchs/data/databriefs/db397-tables-508.pdf#5>.

SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Survey, 1999–2000 through 2017–2018.

<https://www.cdc.gov/nchs/data/databriefs/db397-H.pdf>

Start Earlier!

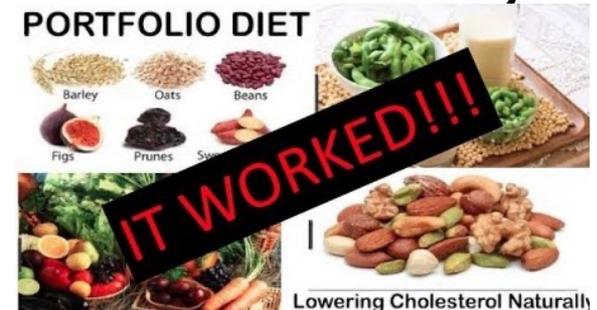
- 4946 adults from the CARDIA study (age 18-30)
- 32 Years of follow up
- Long-term adherence to a plant-centered diet lowered the risk for heart disease by **52%**.
- Starting from an earlier age lowered the risk for heart disease **by 61%** through middle age



Choi Y, Larson N, Steffen LM, et al. Plant-centered diet and risk of incident cardiovascular disease during young to middle adulthood. *J Am Heart Assoc.* 2021;e020718. doi: 10.1161/JAHA.120.020718

It Really Works!

- 123,330 Post Menopausal Women
- Followed 15 years
- Following the Portfolio plant-based diet lowered the risk for heart disease overall by up to 11%



Glenn AJ, Lo K, Jenkins DJA, Boucher BA, Hanley AJ, Kendall CWC, Manson JE, Vitolins MZ, Snetselaar LG, Liu S, Sievenpiper JL. Relationship Between a Plant-Based Dietary Portfolio and Risk of Cardiovascular Disease: Findings From the Women's Health Initiative Prospective Cohort Study. *J Am Heart Assoc.* 2021 Aug 17;10(16):e021515. doi: 10.1161/JAHA.121.021515. Epub 2021 Aug 4. PMID: 34346245; PMCID: PMC8475059.



Really!

- Pooled analysis of 6 prospective cohort studies of 29,682 US participants
- “Substituting eggs, processed meat, unprocessed red meat or poultry with nuts, whole grains, legumes or fish was associated with lower risks of incident CVD and all-cause mortality. ”
- **Up to 54% less** CVD and mortality depending on the extent of substitution!



Zhong VW, Allen NB, Greenland P, et al. Protein foods from animal sources, incident cardiovascular disease and all-cause mortality: a substitution analysis. *Int J Epidemiol.*2021;50(1):223-233. doi: 10.1093/ije/dyaa205



1 Hotdog = 35 Mins Less Life

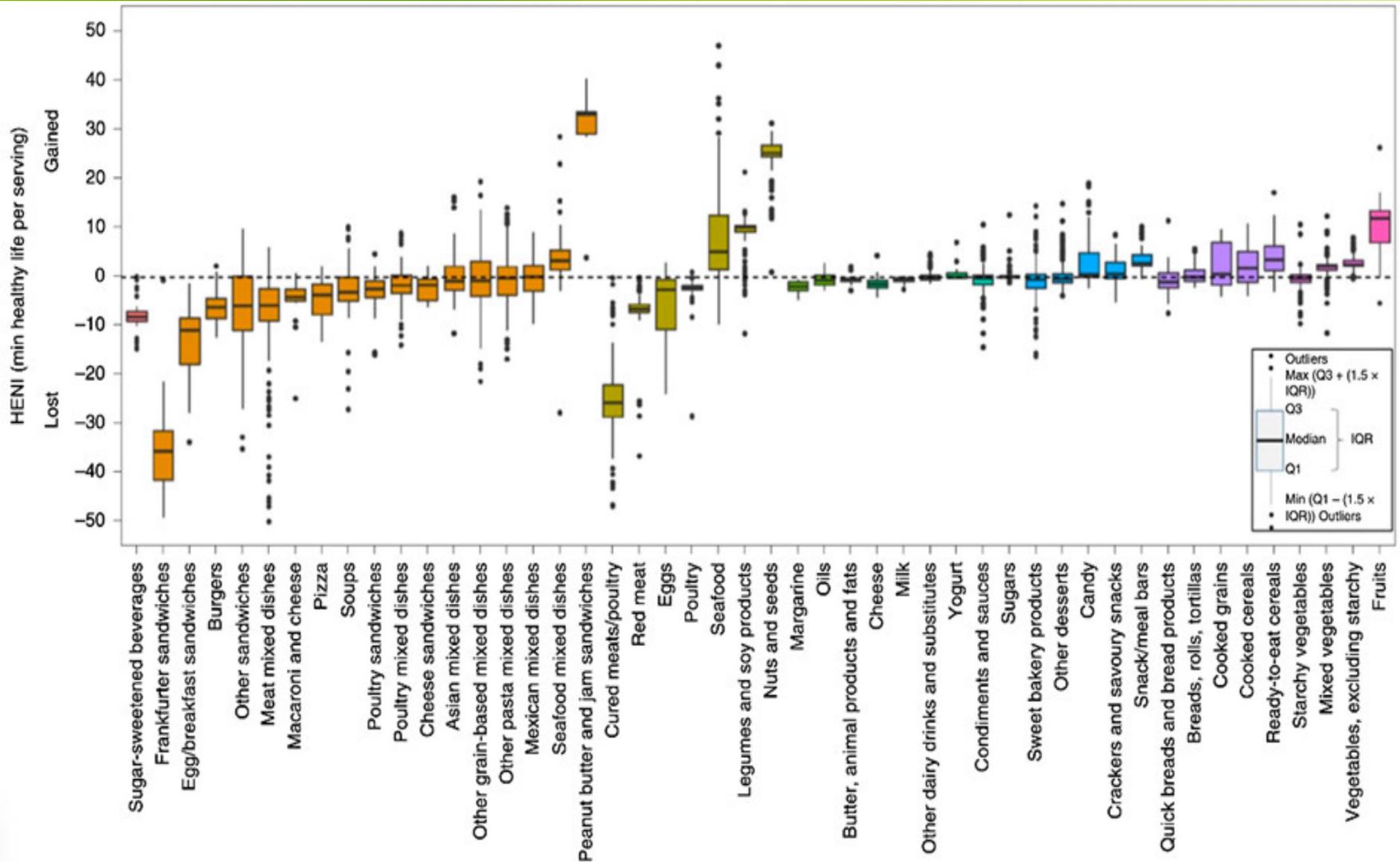
- Nature Food new analysis
- “Our analysis also indicated that substituting only 10% of daily caloric intake from beef and processed meat for fruits, vegetables, nuts, legumes and selected seafood could offer substantial health improvements of 48 min gained per person per day and a 33% reduction in dietary carbon footprint.”
- Hotdog = 35 less minutes
- PB&J = 33 more minutes



Stylianou, K.S., Fulgoni, V.L. & Jolliet, O. Small targeted dietary changes can yield substantial gains for human health and the environment. *Nat Food* 2, 616–627 (2021).
<https://doi.org/10.1038/s43016-021-00343-4>



1 Hotdog = 35 minutes less



Stylianou, K.S., Fulgoni, V.L. & Jolliet, O. Small targeted dietary changes can yield substantial gains for human health and the environment. *Nat Food* 2, 616–627 (2021). <https://doi.org/10.1038/s43016-021-00343-4>

Recommendations	Class ^a	Level ^b
A healthy diet is recommended as a cornerstone of CVD prevention in all individuals. ^{401,402}	I	A

It is recommended to adopt a Mediterranean or similar diet to lower risk of CVD. ^{403,404}	I	A
It is recommended to replace saturated with unsaturated fats to lower the risk of CVD. ^{405–409}	I	A
It is recommended to reduce salt intake to lower BP and risk of CVD. ⁴¹⁰	I	A
It is recommended to choose a more plant-based food pattern, rich in fibre, that includes whole grains, fruits, vegetables, pulses, and nuts. ^{411,412}	I	B
It is recommended to restrict alcohol consumption to a maximum of 100 g per week. ^{413–415}	I	B
It is recommended to eat fish, preferably fatty, at	I	B

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42, Issue 34
Pages 3227
3337, <https://eartj.ehab4>



Breast Cancer



- 318,686 women were followed for 14 years, among whom 13,246 incident breast cancer
- Each **increase of 1 standard deviation (1-Sd)** of the inflammatory food score **increased by 4% the risk of breast cancer, to a 12% greater risk** in those eating the most inflammatory foods
- Higher risks for those post-menopausal



Castro-Espin C, et al. Inflammatory potential of the diet and risk of breast cancer in the European Investigation into Cancer and Nutrition (EPIC) study. *Eur J Epidemiol.* 2021 Sep;36(9):953-964. doi: 10.1007/s10654-021-00772-2. Epub 2021 Jun 20. PMID: 34148186.

Prostate Cancer



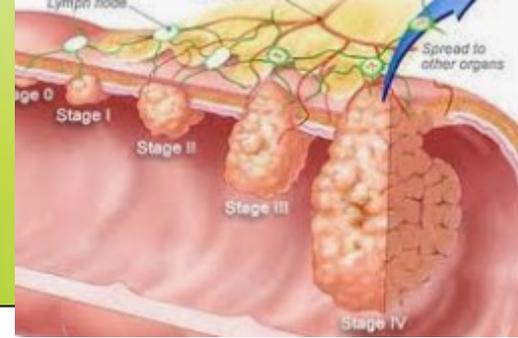
- 410 men (median age, 64.4 years; white, 82.9%) newly diagnosed with Gleason grade group 1 or 2 prostate cancer complete a baseline food frequency questionnaire
- Calculated a Mediterranean diet score — adjusted for age, tumor length and PSA
- Adjusting for age and clinical characteristics, having **a higher Mediterranean diet score overall was associated with a lower risk for grade progression** compared with a low diet score (HR = 0.68; 95% CI, 0.36-1.25).
- One-unit increase in the Mediterranean diet score appeared associated with more than a 10% lower risk for progression for all men (HR = 0.88; 95% CI, 0.77-1.01)



Adherence to the Mediterranean diet and grade group progression in localized prostate cancer: An active surveillance cohort

Gregg, J. R. et al, Mar 1 2021, In: Cancer. 127, 5, p. 720-728 9 p.

Colorectal Cancer



- ~120,000 men and women from the Nurses' Health Study and the Health Professionals Follow-up Study
- 26 years of follow-up
- Cancer cases prevented increased by **almost 30%** when healthy lifestyle was combined with endoscopic screening



Wang K, Ma W, Wu K, et al. Healthy lifestyle, endoscopic screening, and colorectal cancer incidence and mortality in the United States: A nationwide cohort study. *PLoS Med.* 2021;18:e1003522-e1003540. doi: 10.1371/journal.pmed.1003522.

Colon Cancer

- 346,297 participants from the UK Biobank cohort and grouped participants into healthy, unhealthy, and intermediate groups based on American Cancer Society guidelines
- **42% less colon cancer** with reduced red and processed meat consumption and increased fruit and vegetable intake



Choi J, Jia G, Wen W, Shu XO, Zheng W. Healthy lifestyles, genetic modifiers, and colorectal cancer risk: a prospective cohort study in the UK Biobank. *Am J Clin Nutr*. 2021;113(4):810-820. doi: 10.1093/ajcn/nqaa404s

Coffee & Tea Again!

- Japan Collaborative Cohort Study, 46 213 participants (478 stroke survivors, 1214 MI survivors, and 44 521 persons without a history of stroke or MI), aged 40 to 79
- Green tea consumption was inversely associated with all-cause mortality among stroke or MI survivors
- HRs for green tea stroke survivors:
 - 0.73 (0.42–1.27) for 1 to 6 cups/wk
 - 0.65 (0.36–1.15) for 1 to 2 cups/d
 - 0.56 (0.34–0.92) for 3 to 4 cups/d
 - 0.52 (0.31–0.86) for 5 to 6 cups/d
 - and 0.38 (0.20–0.71) for ≥ 7 cups/d, compared with nondrinkers.

This is a 62% risk reduction!

- Green tea = good for stroke or MI survivors
- Coffee = good for MI survivors AND those without either!



Teramoto M, Muraki I, Yamagishi K, Tamakoshi A, Iso H. Green Tea and Coffee Consumption and All-Cause Mortality Among Persons With and Without Stroke or Myocardial Infarction. *Stroke*. 2021 Mar;52(3):957-965. doi: 10.1161/STROKEAHA.120.032273. Epub 2021 Feb 4. PMID: 33535784; PMCID: PMC7903984.

How Much is Too Much

- 362,571 UK Biobank
- A positive dose-dependent association between self-reported coffee intake and plasma concentration of LDL-C, ApoB and total-C, with the highest lipid levels seen among participants reported

drinking >6 cups/day



Ang Zhou Elina Hyppönen Habitual coffee intake and plasma lipid profile: Evidence from UK Biobank

Published: January 10,

2021 DOI: <https://doi.org/10.1016/j.clnu.2020.12.042>



Coffee = LESS Arrhythmia

- 386 258 individuals (mean [SD] age, 56 [8] years; 52.3% female) followed > 4 years
- Each additional cup of habitual coffee consumed was associated with a 3% lower risk of incident arrhythmia including Afib and SVT



Kim E, Hoffmann TJ, Nah G, Vittinghoff E, Delling F, Marcus GM. Coffee Consumption and Incident Tachyarrhythmias: Reported Behavior, Mendelian Randomization, and Their Interactions. *JAMA Intern Med.*2021;181(9):1185–1193. doi:10.1001/jamainternmed.2021.3616



Grains



- New BMJ Study
- 148,851 followed for 9.5 years
- Highest **refined** grains (≥ 350 g/day or about 7 servings/day) = higher risk of total mortality (hazard ratio 1.27, 95% confidence interval 1.11 to 1.46; P for trend=0.004) = **27% More Death**
- Highest major CVD events (1.33, 1.16 to 1.52; P for trend<0.001) = **33% More CVD**
- Compared with the lowest category of intake (<50 g/day).
- Higher intakes of refined grains were associated with higher systolic blood pressure.
- No significant associations were found between intakes of whole grains or white rice and health outcomes.



Intermittent Fasting

- 12-week study, 50 participants
- Mean BMI = 35 (SD = 4.0) and mostly female (74%)
- Those who adhered to the intervention for at least 5 days/week recorded greater weight loss than those with lower adherence
- 26% of the sample lost at least 5% of their body weight at 12 weeks



Przulj D, Ladmore D, Smith KM, Phillips-Waller A, Hajek P (2021) Time restricted eating as a weight loss intervention in adults with obesity. PLoS ONE 16(1): e0246186.
<https://doi.org/10.1371/journal.pone.0246186>



Diet Wars... Again

- 20 adults aged 29.9 ± 1.4 years with body mass index of 27.8 ± 1.3 kg m⁻² were admitted as inpatients to the National Institutes of Health Clinical Center
- Randomized to consume a minimally processed, plant-based, low-fat diet (10.3% fat, 75.2% carbohydrate) with high glycemic load (85 g 1,000 kcal⁻¹) or a minimally processed, animal-based, ketogenic, low-carbohydrate diet (75.8% fat, 10.0% carbohydrate) with low glycemic load (6 g 1,000 kcal⁻¹)
- On for 2 weeks followed immediately by the alternate diet for 2 weeks.
- Low-fat diet led to 689 ± 73 kcal d⁻¹ less energy intake than the low-carbohydrate diet over 2 weeks ($P < 0.0001$) and 544 ± 68 kcal d⁻¹ less over the final week ($P < 0.0001$).
- **Participants ate less on the plant diet**



Hall, K.D., Guo, J., Courville, A.B. *et al.* Effect of a plant-based, low-fat diet versus an animal-based, ketogenic diet on ad libitum energy intake. *Nat Med* **27**, 344–353 (2021).
<https://doi.org/10.1038/s41591-020-01209-1>

Post-Menopausal Women

- Measured types of protein intake in >100,000 post-menopausal women from the Women's Health Initiative
- Those who **consumed the most plant-based protein** from nuts, legumes, and other plant-based foods **were less likely to die** from cardiovascular disease, dementia, and all causes when compared to those who consumed the least amount of plant-based protein.
- Consuming eggs, dairy products, and red meat was associated with a **higher risk of death** from heart disease, cancer, and dementia.
- Results also showed swapping animal protein with plant-based protein sources lowered mortality risk.



Sun Y, Liu B, Snetselaar LG, et al. Association of major dietary protein sources with all-cause and cause-specific mortality: Prospective cohort study. *J Am Heart Assoc.* 2021 Feb 24;e015553. doi: 10.1161/JAHA.119.015553

Meat and Health

- Meat intake was correlated with adverse health outcomes, including hospitalization and mortality, using data from the UK Biobank study
- 474,985 middle-aged Britons
- Every 70 grams of unprocessed red meat and processed meat consumed daily **raised their risk of heart disease by 15% and of diabetes by 30%** after accounting for other lifestyle factors, such as physical activity and alcohol consumption, and body mass index
- Every 30 grams of poultry meat eaten daily **increased the risk of developing GERD by 17% and of diabetes by 14%**



Papier, K., Fensom, G.K., Knuppel, A. *et al.* Meat consumption and risk of 25 common conditions: outcome-wide analyses in 475,000 men and women in the UK Biobank study. *BMC Med* **19**, 53 (2021). <https://doi.org/10.1186/s12916-021-01922-9>

Processed Meat

- 13 articles that compared meat intake with heart disease incidence and mortality rates
- 50 grams per day of processed meat and red meat **increases the risk of cardiovascular disease by 18% and 9%, respectively.**



Papier K, Knuppel A, Syam N, Jebb SA, Key TJ. Meat consumption and risk of ischemic heart disease: A systematic review and meta-analysis. *Crit Rev Food Sci Nutr*. 2021 Jul 20:1-12. doi: 10.1080/10408398.2021.1949575. Epub ahead of print. PMID: 34284672.

Beware: Milk

- Cow's milk is now the most common cause of **fatal** anaphylaxis in older children across the United Kingdom
- Hospital admissions caused by food allergies rose by 5.7% each year with the largest increase among children younger than 15 at 6.6%.
- Fatalities are down, but 26% of deaths were caused by cow's milk allergies, now **the most common single cause of food anaphylaxis-related death in the UK.**
- > 300% increase in prescriptions for emergency anaphylaxis treatment



Baseggio Conrado A, Ierodiakonou A, Gowland MH, Boyle RJ, Turner PJ. Food anaphylaxis in the United Kingdom: analysis of national data, 1998-2018. *BMJ*. Published online February 17, 2021. doi: 10.1136/bmj.n251

Milk & Bones



- > 2000 multiethnic women across the menopause transition
- Analysis of total dairy foods in four categories of <math><0.5</math>, 0.5 to <math><1.5</math>, 1.5 to <math><2.5</math>, and ≥ 2.5 servings/d or <math><1.5</math> and ≥ 1.5 servings/d.
- Dairy food intake was **neither** associated with femoral and spine bone mineral density loss nor the risk of fractures



Wallace TC, Jun S, Zou P, et al. Dairy intake is not associated with improvements in bone mineral density or risk of fractures across the menopause transition: data from the Study of Women's Health Across the Nation. *Menopause*. 2020;27(8):879-886. doi:10.1097/GME.0000000000001555

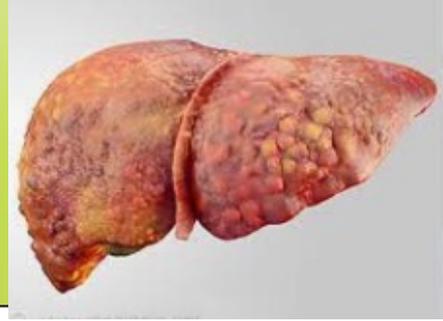
Vegans Don't Fracture

- 34,542 participants from the Adventist Health Study 2
- Analysis showed women on a vegan diet who took both calcium and vitamin D supplements **did not have a greater risk** of fractures when compared to nonvegetarian women



Thorpe DL, Beeson WL, Knutsen R, Fraser GE, Knutsen SF. Dietary patterns and hip fracture in the Adventist Health Study 2: combined vitamin D and calcium supplementation mitigate increased hip fracture risk among vegans. *Am J Clin Nutr.* Published online May 8, 2021. doi: 10.1093/ajcn/nqab095

Fatty Liver No More!



- 294 participants with abdominal obesity/dyslipidemia divided into healthy dietary guidelines (HDG), MED and green-MED weight-loss diet groups
- Overall, NAFLD prevalence declined to: 54.8% (HDG), 47.9% (MED) **and 31.5% (green-MED)**, $p=0.012$ between groups



Yaskolka Meir A, Rinott E, Tsaban G, *et al*
Effect of green-Mediterranean diet on intrahepatic fat: the DIRECT PLUS randomised controlled trial
Gut 2021;**70**:2085-2095.

Fatty Liver II



- 26 participants with NAFLD on a vegan diet for six months and tracked body weight, calorie intake, and liver function.
- Results: weight loss (~5% drop) and improvements in liver enzymes toward normal levels.



Chiarioni G, Popa SL, Dalbeni A, Senore C, Leucuta DC, Baroni L, Fantin A. Vegan Diet Advice Might Benefit Liver Enzymes in Nonalcoholic Fatty Liver Disease: an Open Observational Pilot Study. *J Gastrointest Liver Dis.* 2021 Mar 12;30(1):81-87. doi: 10.15403/jgld-3064. PMID: 33548123.

We Can Save the World!

- > 6 million diet-related deaths a year could be prevented by 2040 if 9 countries representing 50% of the world's population and 70% of the world's emissions adopted climate policies that promoted plant-based diets
- Brazil, China, Germany, India, Indonesia, Nigeria, South Africa, the United Kingdom, and the United States



Hamilton I, Kennard H, McGushin A, et al. The public health implications of the Paris Agreement: a modelling study. *Lancet Planet Health*. 2021;5(2):E74-E83. doi: [10.1016/S2542-5196\(20\)30249-7](https://doi.org/10.1016/S2542-5196(20)30249-7)



Vegan or Med?



- 16-week trial, randomly assignment participants to a vegan diet or a Mediterranean diet in a 1:1 ratio.
- All participants were overweight and did not have a history of diabetes.
- No calorie restrictions in either group
- Participants on the vegan diet lost an average of 13 pounds while those who were on the Mediterranean diet had no change
- **More fat mass was lost on the vegan diet= 7.5 pounds**
- Drops in LDL seen on vegan but not Med diet **(15 point drop)**



Neal D. Barnard, Jihad Alwarith, Emilie Rembert, Liz Brandon, Minh Nguyen, Andrea Goergen, Taylor Horne, Gabriel F. do Nascimento, Kundanika Lakkadi, Andrea Tura, Richard Holubkov & Hana Kahleova (2021) A Mediterranean Diet and Low-Fat Vegan Diet to Improve Body Weight and Cardiometabolic Risk Factors: A Randomized, Cross-over Trial, Journal of the American College of Nutrition, DOI: [10.1080/07315724.2020.1869625](https://doi.org/10.1080/07315724.2020.1869625)

It's the Plants!



- 237 036 men (57%) and 179 068 women
- ages were 62.2 (5.4) years for men and 62.0 (5.4) years for women
- Greater dietary plant protein intake was associated with **reduced overall mortality in both sexes** (hazard ratio per 1 SD was 0.95 [95% CI, 0.94-0.97] for men and 0.95 [95% CI, 0.93-0.96] for women)
- **Essentially 1 SD or more = 5% less death!**
- Lower overall mortality was attributable primarily to substitution of plant protein for egg protein (**24% lower risk in men and 21% lower risk in women**) and red meat protein (**13% lower risk in men and 15% lower risk in women**)



Huang J, Liao LM, Weinstein SJ, Sinha R, Graubard BI, Albanes D. Association Between Plant and Animal Protein Intake and Overall and Cause-Specific Mortality. *JAMA Intern Med.* 2020 Sep 1;180(9):1173-1184. doi: 10.1001/jamainternmed.2020.2790. PMID: 32658243; PMCID: PMC7358979.

Muscle-y Greens!



- 3,759 adults in Australia
- Habitual dietary intake (1 cup) of nitrate-rich vegetables like spinach, lettuce and kale
- **11% stronger** lower limb strength, as well as up to **4% faster** walking speed, compared with those with lower dietary nitrate intake.



Marc Sim, Lauren C Blekkenhorst, Nicola P Bondonno, Simone Radavelli-Bagatini, Peter Peeling, Catherine P Bondonno, Dianna J Magliano, Jonathan E Shaw, Richard Woodman, Kevin Murray, Joshua R Lewis, Robin M Daly, Jonathan M Hodgson. **Dietary Nitrate Intake Is Positively Associated with Muscle Function in Men and Women Independent of Physical Activity Levels.** *The Journal of Nutrition*, 2021; DOI: [10.1093/jn/nxaa415](https://doi.org/10.1093/jn/nxaa415)

Fruit-A-Day

- 7,675 participants from the Australian Diabetes, Obesity and Lifestyle
- Moderate fruit intake = 2 servings/day had better blood sugar control
- **36% less chance** of developing diabetes after five years



Bondonno NP, Davey RJ, Murray K, et al. Associations between fruit intake and risk of diabetes in the AusDiab cohort. *J Clin Endocrinol Metab.* 2021;dgab335. doi: 10.1210/clinem/dgab335

Eggs, again



- 521,120 participants (aged 50–71 years, mean age = 62.2 years, 41.2% women, and 91.8% non-Hispanic white) were recruited from 6 states

- Intake of whole eggs, egg whites/substitutes or other alternative protein sources for facilitating cardiovascular health and long-term survival.

Each intake of an additional 300 mg of dietary cholesterol per day was associated with 19%, 16%, and 24% higher all-cause, CVD, and cancer mortality, respectively.

1.07 (1.06–1.09) for CVD mortality

1.07 (1.06–1.09) for cancer mortality

Each intake of an additional 300 mg of dietary cholesterol per day was associated with 19%, 16%, and 24% higher all-cause, CVD, and cancer mortality, respectively.



Zhuang P, Wu F, Mao L, Zhu F, Zhang Y, Chen X, et al. (2021) Egg and cholesterol consumption and mortality from cardiovascular and different causes in the United States: A population-based cohort study. PLoS Med 18(2): e1003508. <https://doi.org/10.1371/journal.pmed.1003508>

VIEWPOINTS



Cardiovascular Harm From Egg Yolk and Red Meat: More Than Just Cholesterol and Saturated Fat

Egg yolk and red meat should be avoided, and meat intake limited, to prevent cardiovascular disease and stroke. Because of the interaction of impaired renal function with toxic metabolites of the intestinal microbiome, that advice is particularly important for people with impaired renal function, including the elderly. Adopting a more plant-based diet would also improve the sustainability of food sources and reduce harm to the environment from a meat-based diet.

risk and young age of the participants; confounders such as smoking, socioeconomic status, and reverse causality; and unmeasured confounders.¹

Huang et al² reported an analysis of 416 104 men and women in the US National Institutes of Health–American Association of Retired Persons Diet and Health Study. Substituting plant-based protein for

fasting serum cholesterol levels by much is mostly true. However, the conclusion that it is therefore safe to consume them is misleading. The average increase in fasting cholesterol that results from dietary cholesterol is about 10%, but with marked individual differences with important public health implications. Furthermore, dietary cholesterol markedly

J Am Heart Assoc. 2021;10:e017066. DOI: 10.1161/JAHA.120.017066

Bad News for Eggs



- 20,562 participants with no cancer or heart disease diagnoses from the Moli-sani Study cohort
- 8+ years followed
- > 4 eggs per week increased risk of death from all causes (**50% MORE!**), heart disease, and cancer when compared to those who consumed zero eggs or one egg per week
- 2-4 per week increased the risk for cancer mortality and all-cause and heart disease mortality by 22% and 43%, respectively
- For participants with hypertension and hyperlipidemia, an increase of one egg per week increased mortality risk



Ruggiero E, Di Castelnuovo A, Costanzo S, Persichillo M, De Curtis A, Cerletti C, Donati MB, de Gaetano G, Iacoviello L, Bonaccio M; Moli-sani Study Investigators. Egg consumption and risk of all-cause and cause-specific mortality in an Italian adult population. *Eur J Nutr*. 2021 Oct;60(7):3691-3702. doi: 10.1007/s00394-021-02536-w. Epub 2021 Mar 24. PMID: 33763719; PMCID: PMC8437843.

Walnut Signature



- Study used “machine learning techniques” – as an application of artificial intelligence – to determine biomarkers in blood samples that were positively associated with walnut consumption
- 1833 participants at high cardiovascular risk from the PREvención con Dieta MEDiterránea (PREDIMED)
- Cross-sectional associations between 385 known metabolites and walnut consumption
- A total of 19 metabolites were significantly associated with walnut consumption
- The metabolite profile was inversely associated with T2D incidence (HR per 1 SD: 0.83; 95% CI: 0.71, 0.97; P = 0.02). For CVD incidence, the HR per 1-SD was 0.71 (95% CI: 0.60, 0.85; P < 0.001).
- **This means 17% less diabetes and 29% less CVD**



Guasch-Ferré M, Hernández-Alonso P, Drouin-Chartier JP, Ruiz-Canela M, Razquin C, Toledo E, Li J, Dennis C, Wittenbecher C, Corella D, Estruch R, Fitó M, Ros E, Babio N, Bhupathiraju SN, Clish CB, Liang L, Martínez-González MA, Hu FB, Salas-Salvadó J. Walnut Consumption, Plasma Metabolomics, and Risk of Type 2 Diabetes and Cardiovascular Disease. *J Nutr.* 2021 Feb 1;151(2):303-311. doi: 10.1093/jn/nxaa374. PMID: 33382410; PMCID: PMC7850062

Strawberries



- 4-week randomized controlled crossover study
- 3 arms for 4 weeks separated by a one-week washout period: control powder, one serving (low dose: 13 g strawberry powder/day), or two-and-a-half servings (high dose: 32 g strawberry powder/day).
- 33 completed all servings
- Significant reductions in fasting insulin ($p = 0.0002$) following the **high dose strawberry** phase when compared to the low dose strawberry and control phases
- Particle concentrations of total VLDL and chylomicrons, small VLDL, and total and small LDL were **significantly decreased after the high dose strawberry phase**, compared to control and low dose phases (all $p < 0.0001$).



Basu A, Izuora K, Betts NM, Kinney JW, Salazar AM, Ebersole JL, Scofield RH. Dietary Strawberries Improve Cardiometabolic Risks in Adults with Obesity and Elevated Serum LDL Cholesterol in a Randomized Controlled Crossover Trial. *Nutrients*. 2021; 13(5):1421. <https://doi.org/10.3390/nu13051421>

Mushrooms



- 15,546 participants mean age was 44.3 years.
 - Mean follow-up duration of 19.5 years.
 - Participants who ate mushrooms **had lower risk of all-cause mortality** compared with those without mushroom intake (adjusted hazard ratio (HR) = 0.84; 95% CI: 0.73-0.98) after adjusting for demographic, major lifestyle factors, overall diet quality, and other dietary factors including total energy.
- 16% less death!**



Ba DM, Gao X, Muscat J, Al-Shaar L, Chinchilli V, Zhang X, Ssentongo P, Beelman RB, Richie JP Jr. Association of mushroom consumption with all-cause and cause-specific mortality among American adults: prospective cohort study findings from NHANES III. *Nutr J.* 2021 Apr 22;20(1):38. doi: 10.1186/s12937-021-00691-8. PMID: 33888143; PMCID: PMC8061446.

Beware of the Junk



- Data from 3 different studies, tracking the health of more than 209,000 adults.
- All participants had no cardiovascular disease or cancer at baseline.
- Followed 20 years
- Overall, eating a healthy plant-based diet—meaning a diet high in plant-based foods, not necessarily one that is *exclusively* plant-based—was linked with **lowering a person's overall stroke risk by up to 10%**
- Unhealthy plant-based eating ***raised*** stroke risk by ~5%



Quality of Plant-Based Diet and Risk of Total, Ischemic, and Hemorrhagic Stroke

Megu Y. Baden, Zhilei Shan, Fenglei Wang, Yanping Li, JoAnn E. Manson, Eric B. Rimm, Walter C. Willett, Frank B. Hu, Kathryn M. Rexrode

Neurology Apr 2021, 96 (15) e1940-e1953; DOI: 10.1212/WNL.0000000000011713

Fish Oil and A Fib



- 25,119 women and men aged 50 years or older without prior cardiovascular disease or AF
- Randomized to receive EPA-DHA (460 mg/d of EPA and 380 mg/d of DHA) and vitamin D3 (2000 IU/d) (n = 6272 analyzed); EPA-DHA and placebo (n = 6270 analyzed); vitamin D3 and placebo (n = 6281 analyzed); or 2 placebos (n = 6296 analyzed)
- Treatment with EPA-DHA or vitamin D3, compared with placebo, resulted in **no significant difference in the risk of incident AF**



Albert CM, Cook NR, Pester J, Moorthy MV, Ridge C, Danik JS, Gencer B, Siddiqi HK, Ng C, Gibson H, Mora S, Buring JE, Manson JE. Effect of Marine Omega-3 Fatty Acid and Vitamin D Supplementation on Incident Atrial Fibrillation: A Randomized Clinical Trial. *JAMA*. 2021 Mar 16;325(11):1061-1073. doi: 10.1001/jama.2021.1489. PMID: 33724323; PMCID: PMC7967086.

Processed Meat



- > 100,000 participants in the Prospective Urban Rural Epidemiology (PURE) Study
- If you consumed > 150 grams (e.g., 3 hotdogs) of processed meat per week = more heart disease and death **by 46% and 51%**



Iqbal R, Dehghan M, Mente A, et al. Associations of unprocessed and processed meat intake with mortality and cardiovascular disease in 21 countries [Prospective Urban Rural Epidemiology (PURE) Study]: a prospective cohort study. *Am J Clin Nutr*. Published online March 31, 2021. doi: 10.1093/ajcn/nqaa448

The Southern Diet... A Foe!

- REGARDS trial
- 21,069 participants with a mean 9.8 ± 3.8 years of follow-up
- The Mediterranean diet score showed a trend toward an inverse association with risk of SCD (hazard ratio [HR] comparing highest with lowest group, 0.74; 95% CI, 0.55–1.01; $P_{\text{trend}}=0.07$).
- There was a trend toward a **positive association of the Southern dietary pattern with risk of SCD** (HR comparing highest with lowest quartile of adherence, 1.46; 95% CI, 1.02–2.10; $P_{\text{trend}}=0.06$).
- **= 46% MORE SCD!**



Mediterranean Diet Score, Dietary Patterns, and Risk of Sudden Cardiac Death in the REGARDS Study

James M. Shikany et al. Originally published 30 Jun

2021 <https://doi.org/10.1161/JAHA.120.019158> Journal of the

American Heart Association. 2021;10:e019158



Hepatitis E



- Comparison of hepatitis E virus (HEV) RNA-positive blood samples with negative blood samples
- In those positive for Hep E, 97.4% reported pork consumption.
- Donors who did not eat meat had all negative results



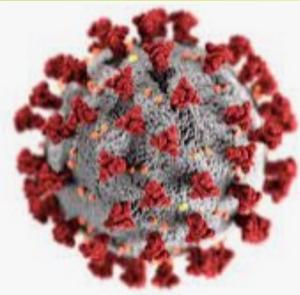
Smith I, Said B, Vaughan A, et al. Case-control study of risk factors for acquired hepatitis E virus infections in blood donors, United Kingdom, 2018–2019. *Emerg Infect Dis*. Published online May 6, 2021. doi: 10.3201/eid2706.203964

Ultraprocessed Foods & HTN

- 6,000 participants (23% Black and 77% white, ages 45 and older)
- Black adults who were in the top 25% of all participants for total ultra-processed food consumption were 55% more likely than white adults to have incident hypertension.
- More Black adults (27%) compared to white adults (24%) fell within the top 25% of all participants who consumed the most ultra-processed foods.
- Men and adults who had less education, lower levels of physical activity and household income below \$35,000 annually were more likely to regularly consume ultra-processed foods.



COVID and PBDs



- Healthcare workers (HCWs) from six countries (France, Germany, Italy, Spain, UK, USA) with substantial exposure to COVID-19
- Following plant-based diets and plant-based diets or pescatarian diets had **73% (OR 0.27, 95% CI 0.10 to 0.81)** and **59% (OR 0.41, 95% CI 0.17 to 0.99)** lower odds of moderate-to-severe COVID-19 severity, respectively, compared with participants who did not follow these diets.



Kim H, Rebholz CM, Hegde S, *et al*
Plant-based diets, pescatarian diets and COVID-19 severity: a population-based case-control study in six countries
BMJ Nutrition, Prevention & Health 2021;4:doi: 10.1136/bmjnp-2021-000272

COVID and Meatpackers

- Within 150 days of a COVID-19 infection, a meatpacking plant that produced beef, pork, or chicken increased infections in that county by 110%, 160%, or 20%, respectively
- Meatpacking plants increase per capita COVID-19 infection rates by up to 160% in their respective counties
- **The study attributes 334,000 infections in the United States to meatpacking plants with an associated morbidity cost of \$11.2 billion.**
- Impacted half a million employees.
- Disproportionate impact on people of color, including Hispanic, Black, and Asian staff.

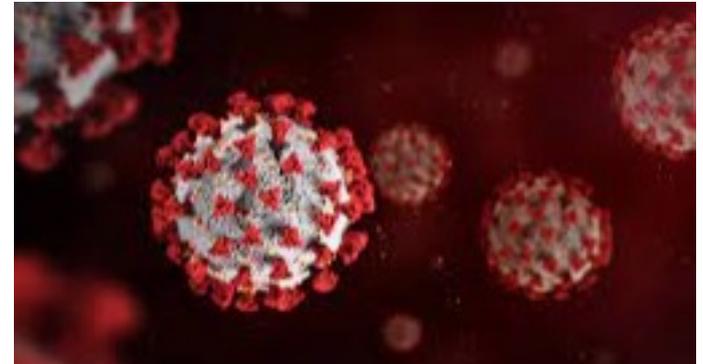


Saitone TL, Schaefer KA, Scheitrum DP. COVID-19 morbidity and mortality in U.S. meatpacking counties. *Food Policy*. 2021;101:102072-102090. doi: 10.1016/j.foodpol.2021.102072



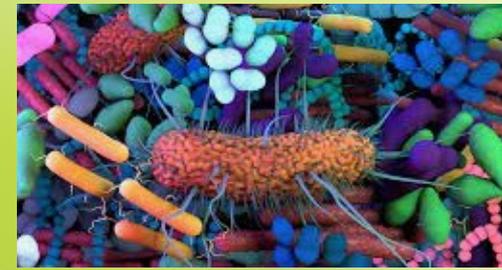
COVID and Eating Well

- 592,571 participants of the smartphone-based COVID Symptom Study
- Diet analyzed using healthful plant-based diet score
- High diet quality was associated with lower risk of COVID-19 (HR, 0.91; 95% CI, 0.88-0.94) and severe COVID-19 (HR, 0.59; 95% CI, 0.47-0.74).
- → 9% less and 61% less!



Diet quality and risk and severity of COVID-19: a prospective cohort study Jordi Merino, et al. medRxiv 2021.06.24.21259283
doi:<https://doi.org/10.1101/2021.06.24.21259283>

The Gut Flora

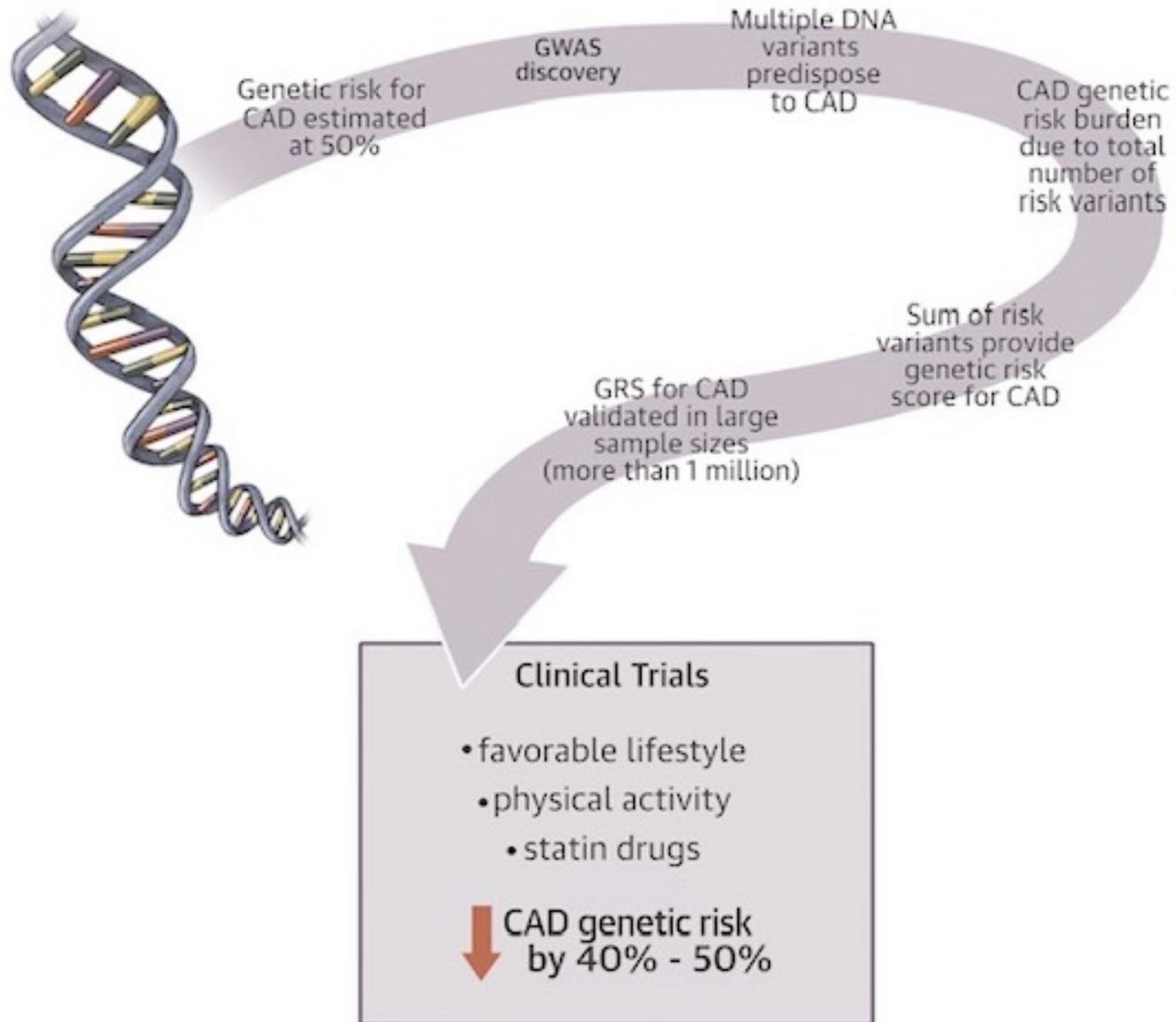


- Examined relationships between 173 dietary factors and the microbiome of 1425 individuals spanning four cohorts: Crohn's disease, ulcerative colitis, irritable bowel syndrome and the general population
- Processed foods and animal-derived foods were consistently associated with higher abundances of Firmicutes, *Ruminococcus* species of the *Blautia* genus and endotoxin synthesis pathways.
- The **opposite was found for diets rich in plant foods and fish**, which were positively associated with short-chain fatty acid-producing commensals and pathways of nutrient metabolism



Bolte LA, Vich Vila A, Imhann F, *et al*
Long-term dietary patterns are associated with pro-inflammatory and anti-inflammatory features of the gut microbiome
Gut 2021;**70**:1287-1298.

CENTRAL ILLUSTRATION The Journey From Gene Discovery to Clinical Application



Roberts, R. et al. J Am Coll Cardiol Basic Trans Science. 2021;6:287-287.

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S

Dispelling Myths

- Those children who follow vegan diets showed normal growth
- They had enough of protein, fiber, and iron.
- Supplementation of vitamins B12 is necessary, and some may choose to supplement with vitamin D or calcium.
- “The current literature suggests that a well-planned vegan diet using supplementation is likely to provide the recommended amounts of critical nutrients to provide for normal progression of height and weight in children, and can be beneficial.”



Sutter DO, Bender N. Nutrient status and growth in vegan children. *Nutr Res*. Published online May 18, 2021. doi: 10.1016/j.nutres.2021.04.005

Sad News

MeatOut, Or Meat In? Governor's Declaration Ignites Carnivorous Culture War

By Megan Verlee | March 9, 2021



Hart Van Denburg/CPR News

Cattle in a Weld County feedlot, November 2019.

Steak will be on the menu in conservative strongholds across Colorado on March 20, thanks to a proclamation from the governor's office urging just the opposite.

Late last month, word started to get out that Gov. Jared Polis has proclaimed the 20th as MeatOut Day. The day, **which was started in 1985 by the Farm Animals Rights Movement**, is meant to encourage

Display a menu ›tarians to consider moving toward a plant-based diet.



<https://www.cpr.org/2021/03/09/meatout-or-meat-in-governors-declaration-ignites-carnivorous-culture-war/>

Cali Schools

- 1350 monthly entrees from California's 25 largest K-12 school districts found that ultra-processed and fast-food items such as cheeseburgers, meat and cheese pizzas, chicken nuggets, deli meat sandwiches and hot dogs are still among the most widely offered items on the menu.
- Only 4% of menu entrees were plant-based (mostly nut/seed butter and jelly)
- 16% contained processed meat

CAN WE DO BETTER?

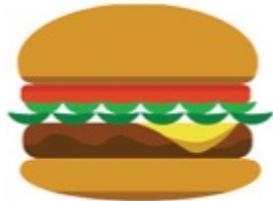


Cali!

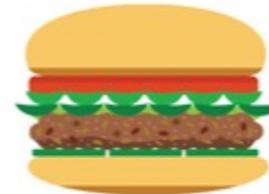
The Burger Swap: Small School Food Shifts Can Make a Big Difference

If all school districts in California swapped out a beef burger for a black bean burger, on just **one day per month**, it would **save 220 million lbs of CO₂-eq.**

BEEF BURGER



BLACK BEAN BURGER



Equivalent to:



22,000 cars off the road for **One year**



1.7 million tree seedlings grown for **18 years**



26,000 residential solar systems for **One year**

Pigs Flying?

VegNewsletter

MARCH 2021

YOUR MONTHLY DOSE OF TOP VEGAN STORIES
AND MUST-MAKE RECIPES

TOP STORIES

BEYOND MEAT



HISTORY IN THE MAKING

MCDONALD'S & BEYOND MEAT SIGN DEAL
TO LAUNCH PLANT-BASED OPTIONS

<https://vegnews.com/2021/2/mcdonalds-beyond-meat-sign-3-year-deal-to-launch-plant-based-options>



HOW TO EAT MAYONNAISE

1. THROW IN GARBAGE
2. MASH UP AVOCADO
3. USE THAT INSTEAD



EATING ANIMALS CAUSES PANDEMICS.com



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CHOOSE VEGAN

INTERSTATE

Meditation

AHA SCIENTIFIC STATEMENT



Meditation and Cardiovascular Risk Reduction A Scientific Statement From the American Heart Association

Glenn N. Levine, MD, FAHA, Chair; Richard A. Lange, MD, MBA, FAHA, Vice Chair; C. Noel Bairev-Merz, MD, FAHA; Richard I. Davidson, PhD;

Overall, studies of meditation suggest a possible benefit on cardiovascular risk, although the overall quality and, in some cases, quantity of study data are modest. Given the low costs and low risks of this intervention, meditation may be considered as an adjunct to guideline-directed cardiovascular risk reduction by those interested in this lifestyle modification, with the understanding that the benefits of such intervention remain to be better established. Further research on meditation and cardiovascular risk is warranted.

myocardial ischemia, and primary and secondary prevention of cardiovascular disease. Overall, studies of meditation suggest a possible benefit on cardiovascular risk, although the overall quality and, in some cases, quantity of study data are modest. Given the low costs and low risks of this intervention, meditation may be considered as an adjunct to guideline-directed cardiovascular risk reduction by those interested in this lifestyle modification, with the understanding that the benefits of such intervention remain to be better established. Further research on meditation and cardiovascular risk is warranted. Such studies, to the degree possible, should utilize randomized study design, be adequately powered to meet the primary study outcome, strive to achieve low dropout rates, include long-term follow-up, and be performed by those without inherent bias in outcome. (*J Am Heart Assoc.* 2017;6:e002218. DOI: 10.1161/JAHA.117.002218.)

2 Hours Outdoors!

THE WALL STREET JOURNAL.

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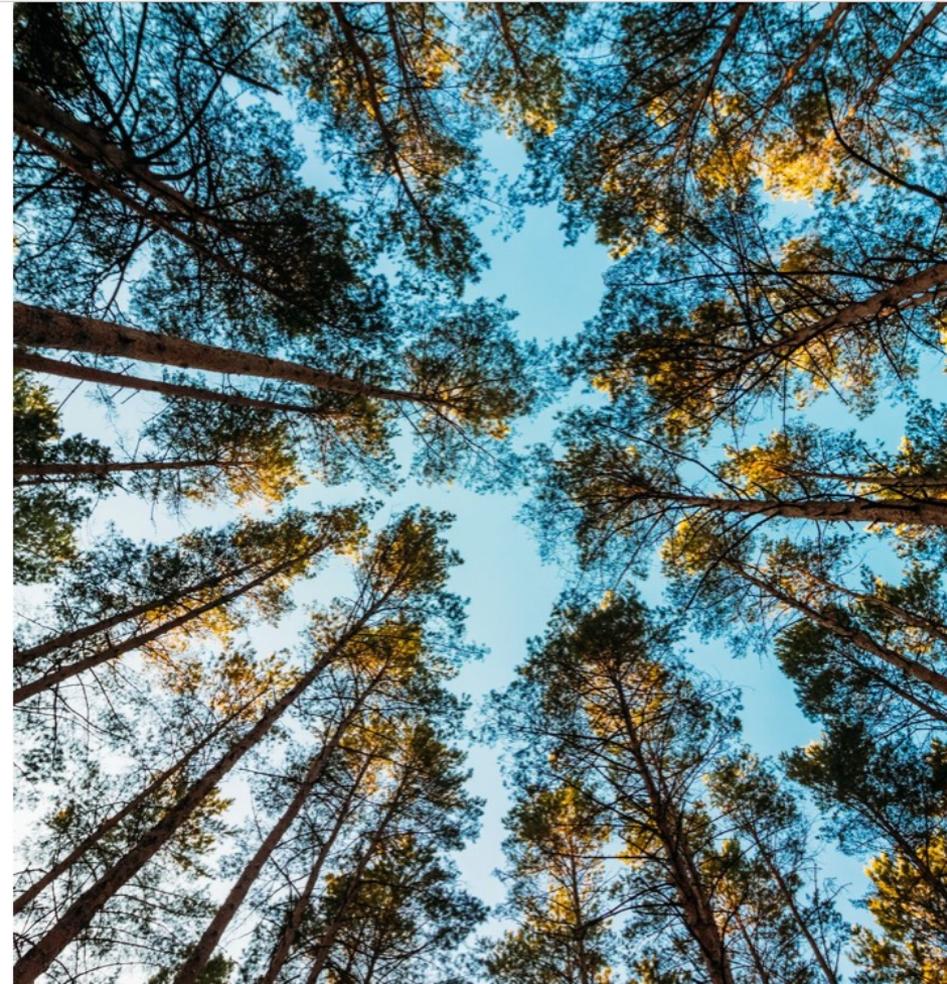
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HEALTH & WELLNESS

For Better Health During the Pandemic, Is Two Hours Outdoors the New 10,000 Steps?

The physical and mental damage inflicted by Covid has doctors, researchers and others racing to tap into nature's therapeutic effects



<https://www.wsj.com/articles/for-better-health-during-the-pandemic-is-two-hours-outdoors-the-new-10-000-steps-11613304002>

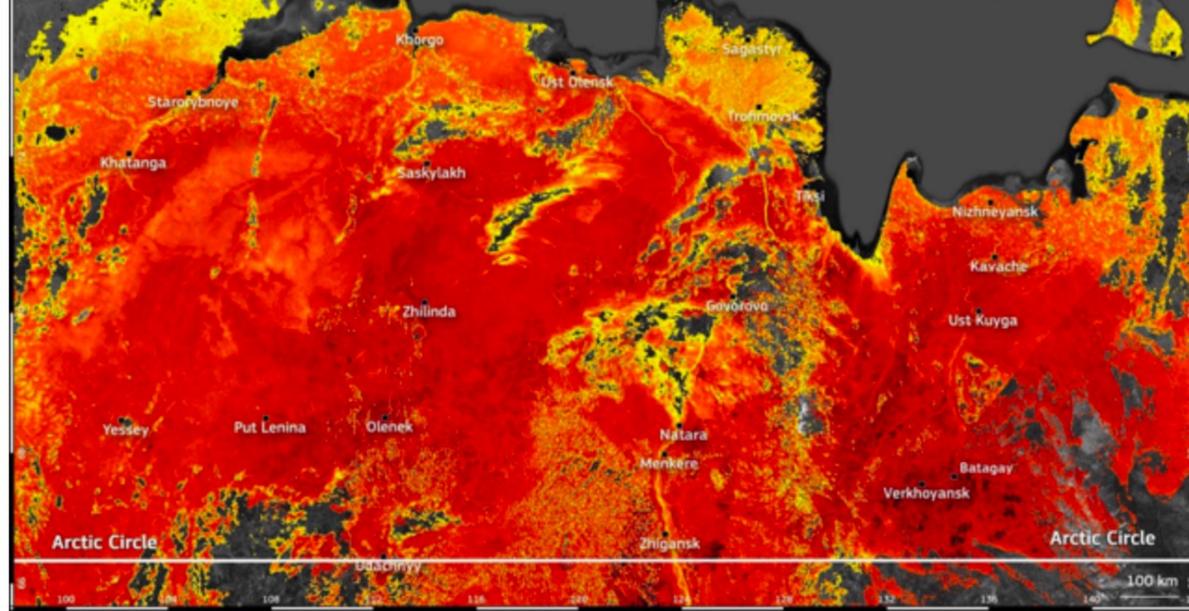
Just Listening to Nature

- 18 Studies Analyzed
- Listening to nature sounds without people decreased stress and annoyance ($g = -0.60$, 95% CI = $-0.97, -0.23$)
- And improved health and positive affective outcomes ($g = 1.63$, 95% CI = $0.09, 3.16$)



A synthesis of health benefits of natural sounds and their distribution in national parks
Rachel T. Buxton, Amber
L. Pearson, Claudia Allou, Kurt Fristrup, George Wittemyer
Proceedings of the National Academy of Sciences Apr
2021, 118 (14) e2013097118; DOI:10.1073/pnas.2013097118

June 2021



Ground temperatures across Siberia have reached record highs during the region's heatwave.

Ground Temperatures Hit 118 Degrees in the Arctic Circle

Isaac Schultz
6/22/21 8:30am

Newly published satellite imagery shows the ground temperature in at least one location in Siberia topped 118 degrees Fahrenheit (48 degrees Celsius) going into the year's longest day. It's hot Siberia Earth summer.



End the Disease!



EXPLORE

REAL SIMPLE

8.5 Million Pounds of Tyson Chicken Products Recalled Due to Listeria Risk

Ready-to-eat chicken products from Walmart, Publix, Wegmans, and H-E-B are included in the recall.



By [Lisa Milbrand](#) | July 06, 2021



Beware Long Working Hours

- WHO
- “Working **55 hours or more per week is a serious health hazard**,” added Dr Maria Neira, Director, Department of Environment, Climate Change and Health, at the World Health Organization.
- “In a first global analysis of the loss of life and health associated with working long hours, WHO and ILO estimate that, in 2016, 398 000 people died from stroke and 347 000 from heart disease as a result of having worked at least 55 hours a week. “
- 2000 to 2016, the number of deaths from CV disease due to working long hours increased by 42%, and from stroke by 19%



<https://www.who.int/news/item/17-05-2021-long-working-hours-increasing-deaths-from-heart-disease-and-stroke-who-ilo>
<https://www.sciencedirect.com/science/article/pii/S0160412021002208>



Swimming!



- Adults with type 2 diabetes and hypertension
- **2 hours of swimming exercise 3x/week** for 16 weeks, compared with a control group who did not exercise.
- Decreases in blood glucose levels, lipid profiles, arterial blood pressure and body fat



Omar, J.S., Jaradat, N., Qadoumi, M. *et al.* Regular swimming exercise improves metabolic syndrome risk factors: a quasi-experimental study. *BMC Sports Sci Med Rehabil* **13**, 22 (2021). <https://doi.org/10.1186/s13102-021-00254-8>

Environment

Talking points

Meat eating: The latest culture war

Meat eating is America's "new culture war" said



raise than beans, according to *Epicurious* editors—“but

meat consumption. “There is no way for humans to consume meat in the way we do without abetting catastrophic warming.” Raising beef cattle is

dent Joe Biden's climate plan calls for cutting meat from Americans' diets. Biden isn't banning meat, said Zack Beauchamp in *Vox.com*, but the “grain of truth” in that right-wing rumor is that any plan to combat climate change must address meat consumption. “There is no way for humans to consume meat in the way we do without abetting catastrophic warming.” Raising beef cattle is energy-intensive and, combined with the methane gas released by the digestive processes of hundreds of millions of farm animals, creates more than 15 percent of global greenhouse gas emissions. In future years, we may look back at this pivotal time “as the meat wars’ Fort Sumter.”

Americans will never accept “canceling beef,” said James Hohmann in *The Washington Post*. Yes, producing plant-based foods leaves a smaller carbon footprint—cows are 20 times less efficient to

poor people's health and life expectancy improved when meat was introduced to their diets, said Grant Addison in *WashingtonExaminer.com*. So while there can be “good and noble reasons not to eat meat,” spare us the “pompous and shallow” virtue signaling by restaurants and foodie magazines that cater to wealthy urban elites.

Fine—let's keep fancy restaurants and the federal government out of this, said Jennifer Barkley in *TheHill.com*. Animal agriculture causes mass deforestation, uses a quarter of the world's scarce freshwater supply, and produces billions of gallons of polluting animal waste a year. As plant-based meats become more common and sales increase, “a viable alternative to the all-American beef burger is increasingly within reach.” The reasons for reducing meat consumption are clear. “It's up to us.”

THE WEEK May 21, 2021



Ornish Lifestyle Medicine National Outcomes Q1 2019

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

These improvements would have been even greater if medications were unchanged.

	Baseline	9 weeks	Change
Weight Loss	199.7	189.2	-5.2%
BMI	31.5	29.9	5.2%
Total Cholesterol	167.3	141.7	-15.3%
LDL Cholesterol	91.0	72.1	-20.7%
HDL Cholesterol	48.0	43.9	-8.5%
Triglycerides	149.0	132.5	-11.0%
Systolic Blood Pressure	129.2	121.9	-5.7%
Diastolic Blood Pressure	75.4	70.7	-6.3%
HbA1c	6.6	6.2	-6.3%
Depression Score (CESD)	11.4	5.6	-49.4%
Exercise Capacity (Mets)	3.7	5.5	47.6%

Data is based off participants thru Q1 2019 quarterly report. N-6783participants.

Note: In addition to these results, many participants reduced or discontinued their medications by their physician.

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!

Convinced?

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

