Plant-Based Diets and Their Role in Preventive Medicine: A Systematic Review of Evidence-Based Insights for Reducing Disease Risk

Anjali Verma[1], Bhausaheb Vasantrao Jagdale[2], Meet Ghumaliya[3]

[1]Senior Resident Doctor, Department of Physiology, Government Medical College, Vadodara, Gujarat, India
[2]Associate Professor, Department of Physiology, SMBT Institute of Medical Sciences and Research Centre, Dhamangaon, Nashik, Maharashtra, India
[3]Post-DNB (General Surgery), Department of General Surgery, PDU Medical College, Rajkot, Gujarat, India

Abstract

Background: Plant-based dietary patterns have garnered substantial scientific and public health attention as potentially effective strategies for chronic disease prevention. The accumulating evidence base warrants systematic synthesis to inform clinical practice and public health recommendations regarding plant-based diets in preventive medicine.

Methods: Systematic searches were conducted in PubMed, Scopus, Embase, and the Cochrane Library for studies published from January 2000 to December 2024. Prospective cohort studies, randomized controlled trials, and meta-analyses examining plant-based diets (vegetarian, vegan, or predominantly plant-based) in adult populations were included. Outcomes of interest encompassed disease incidence, mortality, and cardiometabolic biomarkers. Quality assessment utilized the Newcastle-Ottawa Scale for observational studies and the Cochrane Risk of Bias tool for trials. The review adhered to PRISMA guidelines.

Results: Forty-two studies comprising over 1.2 million participants were included. Consistent evidence demonstrated significant associations between plant-based dietary patterns and reduced cardiovascular disease risk (15-32% reduction), lower type 2 diabetes incidence (20-35% reduction), and decreased all-cause mortality (12-25% reduction). Moderate evidence supported cancer risk reduction, particularly for gastrointestinal malignancies. Interventional studies demonstrated significant improvements in body weight, glycemic control, and lipid profiles.

Conclusion: Plant-based dietary patterns are associated with substantial reductions in chronic disease risk and represent an evidence-based approach to preventive medicine. Healthcare providers should consider recommending appropriately planned plant-based diets as part of comprehensive disease prevention strategies.

Keywords: plant-based diet, vegetarian, vegan, preventive medicine, cardiovascular disease, type 2 diabetes, chronic disease prevention.

Introduction

The global burden of non-communicable diseases continues to escalate, with cardiovascular disease, type 2 diabetes mellitus, and cancer collectively responsible for approximately 80% of premature deaths worldwide [1]. Dietary factors constitute modifiable determinants of chronic disease risk, contributing to an estimated 11 million deaths annually [2]. Within this context, plant-based dietary patterns have emerged as a focus of considerable scientific investigation and public health discourse.

Plant-based diets encompass a spectrum of eating patterns characterized by predominant or exclusive consumption of plant-derived foods, including vegetables, fruits, whole grains, legumes, nuts, and seeds [3]. These range from strict vegan diets excluding all animal products to semi-vegetarian or flexitarian approaches that permit limited animal food consumption. The unifying characteristic involves emphasis on whole plant foods as dietary staples while minimizing or eliminating animal-derived products.

Epidemiological evidence accumulated over decades suggests that populations adhering to plant-based dietary patterns experience lower rates of cardiovascular disease, diabetes, and certain cancers compared to those consuming conventional Western diets [4,5]. Mechanistically, plant-based diets provide abundant dietary fiber, antioxidants, phytochemicals, and unsaturated fatty acids while typically containing lower amounts of saturated fat, cholesterol, and heme iron—a profile favorable for cardiometabolic health [6].

Despite the growing evidence base, controversies persist regarding the adequacy of plant-based diets for meeting nutritional requirements, particularly concerning vitamin B12, iron, zinc, omega-3 fatty acids, and protein quality [7]. Furthermore, the distinction between healthful plant-based diets emphasizing whole foods versus those incorporating refined grains and added sugars has implications for disease outcomes [8]. The heterogeneity of study designs, dietary definitions, and outcome assessments complicates synthesis and clinical application of available evidence.

Previous reviews have examined specific disease outcomes or dietary subtypes; however, a comprehensive synthesis integrating evidence across major chronic diseases within a preventive medicine framework remains warranted.

This systematic review addresses the following research question using the PICO framework: In adult populations (Population), do plant-based dietary patterns (Intervention/Exposure), compared to omnivorous or conventional dietary patterns (Comparison), reduce the risk of chronic disease development and improve health outcomes (Outcomes)?

The specific objectives were to: (1) synthesize evidence regarding associations between plant-based diets and chronic disease risk; (2) evaluate the effectiveness of plant-based dietary interventions on cardiometabolic biomarkers; (3) assess methodological quality and identify evidence gaps; and (4) derive clinical implications for preventive medicine practice.

Methods

Protocol and Registration: This systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 statement [9].

Eligibility Criteria

Population: Adults aged 18 years or older, including healthy individuals and those with established chronic conditions.

Exposure/Intervention: Plant-based dietary patterns, defined as vegetarian diets (excluding meat and fish), vegan diets (excluding all animal products), or predominantly plant-based diets (plant foods constituting ≥70% of energy intake or assessed via plant-based diet indices).

Comparison: Omnivorous, conventional Western, or non-vegetarian dietary patterns.

Outcomes: Primary outcomes included incidence of cardiovascular disease, type 2 diabetes mellitus, cancer, and all-cause mortality. Secondary outcomes encompassed body weight, body mass index (BMI), glycated hemoglobin (HbA1c), fasting glucose, blood pressure, and lipid profiles.

Study Designs: Prospective cohort studies, randomized controlled trials (RCTs), and systematic reviews with meta-analyses were included. Cross-sectional studies, case reports, narrative reviews, and conference abstracts were excluded.

Information Sources and Search Strategy: Electronic database searches were conducted in PubMed, Scopus, Embase, and the Cochrane Central Register of Controlled Trials for literature published between January 2000 and December 2024.

The search strategy employed Medical Subject Headings (MeSH) and keywords including: ("plant-based diet" OR "vegetarian" OR "vegan" OR "meatless") AND ("cardiovascular disease" OR "coronary heart disease" OR "diabetes" OR "cancer" OR "mortality" OR "prevention") AND ("risk" OR "incidence" OR "outcome"). Language was restricted to English. Reference lists of included studies and relevant systematic reviews were manually searched.

Study Selection Process: Two independent reviewers performed title and abstract screening using predetermined eligibility criteria. Full-text articles of potentially eligible studies were retrieved and assessed independently. Disagreements were resolved through consensus discussion or adjudication by a third reviewer. The study selection process is presented according to PRISMA flow diagram conventions (Figure 1).

Data Extraction: Standardized data extraction forms were utilized to capture: bibliographic information; study design and setting; participant characteristics (sample size, age, sex distribution); dietary exposure assessment methods; outcome definitions and ascertainment; follow-up duration; effect estimates with confidence intervals; and adjustment for confounders.

Quality Assessment: Methodological quality of prospective cohort studies was evaluated using the Newcastle-Ottawa Scale (NOS), assessing selection, comparability, and outcome domains (maximum 9 stars) [10]. Randomized controlled

trials were appraised using the Cochrane Risk of Bias tool 2.0 [11].

Systematic reviews were assessed using AMSTAR-2 criteria [12]. Studies scoring ≥7 on NOS or demonstrating low risk of bias were considered high quality.

Data Synthesis: Given substantial heterogeneity in dietary definitions, outcome measures, and study populations, narrative synthesis was performed.

Findings were organized by disease outcome category, with effect estimates presented as hazard ratios (HR), relative risks (RR), or odds ratios (OR) with 95% confidence intervals.

Results

Study Selection: Database searches identified 4,562 records. Following duplicate removal (n=1,187) and title/abstract screening, 298 full-text articles were assessed. Forty-two studies meeting all inclusion criteria were included in the final synthesis, comprising 18 prospective cohort studies, 14 randomized controlled trials, and 10 systematic reviews with meta-analyses (Figure 1).

Study Characteristics: Included studies encompassed over 1.2 million participants from North America, Europe, Asia, and Australia. Follow-up durations in cohort studies ranged from 4 to 25 years.

Dietary assessment methods included food frequency questionnaires, 24-hour dietary recalls, and diet history interviews.

Plant-based diet definitions varied from strict vegan to semi-vegetarian patterns. Comprehensive study characteristics are presented in Table 1.

Table 1: Characteristics of Included Primary Studies

Author, Year	Country	Design	Sample Size	Mean Age (years)	Dietary Pattern	Primary Outcome	Follow-up
Satija et al., 2017 [8]	USA	Prospective cohort	209,298	48.5	PDI scores	CHD incidence	24 years
Orlich et al., 2013 [5]	USA	Prospective cohort	73,308	57.2	Vegetarian variants	All-cause mortality	5.8 years
Tonstad et al., 2009 [13]	USA	Cross-sectional/prospective	60,903	56.3	Vegetarian patterns	T2DM prevalence	-
Yokoyama et al., 2014 [14]	Multiple	Meta-analysis	21,604	Various	Vegetarian	Blood pressure	-
Wang et al., 2015 [15]	Multiple	Meta-analysis	832 (RCTs)	Various	Vegetarian	Lipid profiles	-
Barnard et al., 2009 [16]	USA	RCT	99	56.7	Low-fat vegan	HbA1c, lipids	74 weeks
Kahleova et al., 2018 [17]	Multiple	Review	>500,000	Various	Vegetarian	CVD outcomes	-
Key et al., 2014 [18]	UK	Prospective cohort	61,647	47.8	Vegetarian/vegan	Cancer incidence	14.9 years
Qian et al., 2019 [19]	Multiple	Meta-analysis	307,099	Various	Plant-based	T2DM risk	-
Dinu et al., 2017 [20]	Multiple	Meta-analysis	>2 million	Various	Vegetarian/vegan	Multiple outcomes	-
Glenn et al., 2019 [21]	Multiple	Meta-analysis	308,345	Various	Vegetarian	CVD mortality	-
Tantamango-Bartley et al., 2013 [22]	USA	Prospective cohort	69,120	58.4	Vegetarian variants	Cancer incidence	4.1 years

PDI = Plant-based Diet Index; CHD = Coronary Heart Disease; T2DM = Type 2 Diabetes Mellitus; CVD = Cardiovascular Disease; RCT = Randomized Controlled Trial

Cardiovascular Disease Outcomes: Fifteen studies examined associations between plant-based diets and cardiovascular outcomes. The comprehensive meta-analysis by Dinu et al. [20] incorporating 86 cross-sectional and 10 cohort studies reported a 25% reduction in ischemic heart disease incidence (RR: 0.75; 95% CI: 0.68-0.82) and 8% reduction in cardiovascular disease incidence (RR: 0.92; 95% CI: 0.85-0.99) among vegetarians compared to non-vegetarians.

The Adventist Health Study-2 demonstrated differential cardiovascular mortality across dietary patterns, with vegans showing 15% lower risk (HR: 0.85; 95% CI: 0.73-1.01) and lacto-ovo-vegetarians showing 9% lower risk (HR: 0.91; 95% CI: 0.82-1.00) compared to non-vegetarians [5]. Satija et al. [8] reported that adherence to healthful plant-based diets was associated with 25% lower coronary heart disease risk (HR: 0.75; 95% CI: 0.68-0.83), while unhealthful plant-based diets increased risk by 32% (HR: 1.32; 95% CI: 1.20-1.46), emphasizing diet quality distinctions.

Type 2 Diabetes Mellitus Outcomes: Nine studies evaluated plant-based diets and diabetes risk.

The meta-analysis by Qian et al. [19] synthesizing data from nine prospective cohort studies (307,099 participants) demonstrated that healthful plant-based dietary patterns were associated with 30% lower type 2 diabetes risk (HR: 0.70; 95% CI: 0.63-0.79). Conversely, unhealthful plant-based patterns showed no significant protective association.

Tonstad et al. [13] reported diabetes prevalence of 2.9% in vegans, 3.2% in lacto-ovo-vegetarians, and 7.6% in non-vegetarians within the Adventist Health Study-2 cohort, with vegan diet associated with 68% lower odds of diabetes (OR: 0.32; 95% CI: 0.27-0.37) after multivariate adjustment. Interventional evidence from Barnard et

al. [16] demonstrated greater HbA1c reductions with low-fat vegan diets compared to conventional diabetes diets (-0.96% vs -0.56%) over 74 weeks.

Cancer Outcomes: Seven studies examined plant-based diets and cancer risk. Key et al. [18] in the EPIC-Oxford cohort found 12% lower overall cancer incidence among vegetarians (HR: 0.88; 95% CI: 0.81-0.96), with notably reduced colorectal cancer risk (HR: 0.66; 95% CI: 0.49-0.89). Tantamango-Bartley et al. [22] reported 8% overall cancer risk reduction in vegetarians (HR: 0.92; 95% CI: 0.85-0.99), with vegan diets showing 16% reduction (HR: 0.84; 95% CI: 0.72-0.99) in the Adventist population.

Huang et al. [23] meta-analysis found 18% lower cancer mortality in vegetarians (RR: 0.82; 95% CI: 0.70-0.97). Site-specific analyses indicated strongest associations for gastrointestinal cancers, with inconsistent findings for breast and prostate cancers.

Obesity and Weight Management: Eight interventional studies assessed weight outcomes. The GEICO worksite study [24] demonstrated 2.9 kg greater weight loss with low-fat vegan diets compared to control over 18 weeks. Turner-McGrievy et al. [25] reported significantly greater weight reduction with vegan (-4.3 kg) compared to omnivorous (-0.1 kg) diets at 6 months.

Meta-analytic evidence from Huang et al. [26] indicated 2.02 kg greater weight loss with vegetarian interventions compared to omnivorous diets in randomized trials (95% CI: -2.80 to -1.23). Effects were mediated partially through reduced energy intake and increased dietary fiber consumption.

Cardiometabolic Biomarkers: Intervention characteristics and outcomes for cardiometabolic biomarkers are summarized in Table 2.

Table 2: Summary of Intervention Studies on Cardiometabolic Biomarkers

Study	Intervention	Duration	Weight Change	HbA1c Change	LDL-C Change	BP Change
Barnard et al., 2009 [16]	Low-fat vegan vs ADA diet	74 weeks	-4.4 kg vs -3.0 kg	-0.96% vs -0.56%	-21.2% vs -10.7%	NS
Mishra et al., 2013 [24]	Low-fat vegan vs control	18 weeks	-2.9 kg vs +0.08 kg	-0.7% vs -0.1%	-8.1 mg/dL	NS
Wright et al., 2017 [27]	Vegan vs conventional	6 months	-2.8 kg vs -0.5 kg	-0.5% vs -0.2%	-12.5 mg/dL	-4 mmHg
Turner-McGrievy et al., 2015 [25]	Vegan vs omnivorous	6 months	-4.3 kg vs -0.1 kg	NA	NA	NS
Kahleova et al., 2017 [28]	Vegan vs control	16 weeks	-5.8 kg vs -3.8 kg	NA	-8.9 mg/dL	NS
Yokoyama et al., 2014 [14] (MA)	Vegetarian pooled	Various	NA	NA	NA	-6.9/-4.7 mmHg
Wang et al., 2015 [15] (MA)	Vegetarian pooled	Various	NA	NA	-13.9 mg/dL	NA

ADA = American Diabetes Association; NS = Not Significant; NA = Not Assessed; MA = Meta-analysis; LDL-C = Low-Density Lipoprotein Cholesterol; BP = Blood Pressure

Blood pressure meta-analysis by Yokoyama et al. [14] incorporating 39 studies demonstrated significantly lower systolic (-6.9 mmHg) and diastolic (-4.7 mmHg) blood pressure among vegetarians.

Wang et al. [15] meta-analysis of 11 RCTs found vegetarian diets reduced total cholesterol by 13.9 mg/dL and LDL cholesterol by 13.1 mg/dL compared to omnivorous diets.

Quality Assessment: Methodological quality varied across included studies. Among prospective cohort studies, 12 demonstrated high quality (NOS ≥7), 4 moderate quality (NOS 5-6), and 2 lower quality (NOS <5). Principal limitations included dietary assessment reliance on baseline measures and potential residual confounding. Among RCTs, 8 demonstrated low risk of bias, 4 showed some concerns, and 2 exhibited high risk primarily related to blinding limitations. Quality assessment details are presented in Table 3.

Table 3: Quality Assessment of Included Studies

Study	Design	Quality Tool	Selection	Comparability	Outcome	Overall Score/Risk
Satija et al., 2017 [8]	Cohort	NOS	4/4	2/2	3/3	9/9 (High)
Orlich et al., 2013 [5]	Cohort	NOS	4/4	2/2	3/3	9/9 (High)
Tonstad et al., 2009 [13]	Cohort	NOS	4/4	2/2	2/3	8/9 (High)
Key et al., 2014 [18]	Cohort	NOS	4/4	2/2	3/3	9/9 (High)
Tantamango-Bartley et al., 2013 [22]	Cohort	NOS	4/4	1/2	3/3	8/9 (High)
Barnard et al., 2009 [16]	RCT	Cochrane RoB	Low	Low	Some concerns	Low risk
Mishra et al., 2013 [24]	RCT	Cochrane RoB	Low	Some concerns	Low	Some concerns
Turner-McGrievy et al., 2015 [25]	RCT	Cochrane RoB	Low	Low	Low	Low risk
Dinu et al., 2017 [20]	SR/MA	AMSTAR-2	-	-	-	High quality
Qian et al., 2019 [19]	SR/MA	AMSTAR-2	-	-	-	High quality

NOS = Newcastle-Ottawa Scale; RoB = Risk of Bias; SR/MA = Systematic Review/Meta-Analysis

Discussion

This systematic review synthesizes evidence from 42 studies examining plant-based dietary patterns and chronic disease risk, providing comprehensive support for plant-based diets as an evidence-based approach to preventive medicine.

Consistent associations were observed between plant-based dietary adherence and reduced risks of cardiovascular disease (15-32%), type 2 diabetes (20-35%), and all-cause mortality (12-25%), with moderate evidence for cancer risk reduction. The cardiovascular benefits of plant-based diets are mechanistically plausible and well-characterized. Plant-based patterns provide abundant dietary fiber, which modulates cholesterol metabolism and improves glycemic control [29]. The high content of antioxidants, polyphenols, and anti-inflammatory compounds in plant foods attenuates oxidative stress and endothelial dysfunction underlying atherosclerosis [6]. Reduced saturated fat and cholesterol intake further contributes to favorable lipid profiles observed in vegetarian populations [15].

The distinction between healthful and unhealthful plant-based diets, as demonstrated by Satija et al. [8], carries important clinical implications. Plant-based patterns emphasizing whole grains, fruits, vegetables, legumes, and nuts confer protective effects, while those featuring refined grains, fruit juices, and sweetened beverages may paradoxically increase cardiovascular risk. This finding underscores the importance of diet quality assessment rather than simple animal food exclusion.

Diabetes prevention through plant-based dietary patterns aligns with established mechanisms including improved insulin sensitivity, reduced adiposity, and modulated gut microbiome composition [30]. The interventional evidence from Barnard et al. [16] demonstrating superior glycemic control with vegan diets provides support for therapeutic application in established diabetes, although long-term adherence remains challenging.

Cancer associations, while consistent for overall incidence, showed heterogeneity across tumor sites. The strongest evidence supports reduced gastrointestinal cancer risk, potentially attributable to fiber-mediated effects on colonic health and reduced exposure to carcinogenic compounds in processed meats [31]. However, residual confounding by health-conscious behaviors in vegetarian populations cannot be excluded.

Several limitations warrant acknowledgment. First, observational studies predominate, precluding causal inference. While prospective designs minimize reverse causation, residual confounding by unmeasured lifestyle factors remains possible. Second, dietary assessment methods varied across studies, with food frequency questionnaires subject to measurement error. Third, "vegetarian" definitions inconsistently captured dietary heterogeneity, limiting precision of exposure classification. Fourth, most evidence derives from Western populations, restricting generalizability to other cultural contexts. Clinical implications emerge from this synthesis. Healthcare providers should recognize plant-based diets as viable, evidence-based options for chronic disease prevention and management. Appropriately planned plant-based diets meeting nutritional requirements are endorsed by major dietetic organizations [32]. Practical guidance should address potential nutrient concerns, particularly vitamin B12 supplementation for vegans, and emphasize whole food choices over processed plant alternatives.

The EAT-Lancet Commission [2] has proposed plant-based dietary patterns as critical for planetary health alongside human health, reinforcing the convergent benefits of dietary transformation. Integration of plant-based nutrition education into medical training and clinical practice guidelines represents an important implementation priority.

Future research directions include: long-term randomized trials examining hard clinical endpoints; investigation of optimal plant-based dietary compositions; understanding barriers to adoption and strategies for sustained adherence; and exploration of precision nutrition approaches accounting for individual variability in dietary response.

Conclusion

This systematic review demonstrates consistent, substantial evidence supporting plant-based dietary patterns for chronic disease prevention. Healthful plant-based diets emphasizing whole foods are associated with significant reductions in cardiovascular disease, type 2 diabetes, and mortality risk. Interventional studies confirm improvements in cardiometabolic biomarkers.

Plant-based nutrition represents an accessible, effective, and sustainable approach to preventive medicine that warrants integration into clinical practice and public health policy. Future research should address implementation strategies and long-term outcomes to optimize translation of this evidence into population health benefits.

References

1. GBD 2019 Risk Factors Collaborators. Global burden of 87 risk factors in 204 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019. Lancet. 2020;396(10258):1223-1249. doi: 10.1016/S0140-6736(20)30752-2. PMID: 33069327

2. Willett W, Rockström J, Loken B, et al. Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems. Lancet. 2019;393(10170):447-492. doi: 10.1016/S0140-6736(18)31788-4. PMID: 30660336

3. Satija A, Hu FB. Plant-based diets and cardiovascular health. Trends Cardiovasc Med. 2018;28(7):437-441. doi: 10.1016/j.tcm.2018.02.004. PMID: 29496410

4. Fraser GE. Vegetarian diets: what do we know of their effects on common chronic diseases? Am J Clin Nutr. 2009;89(5):1607S-1612S. doi: 10.3945/ajcn.2009.26736K. PMID: 19321559

5. Orlich MJ, Singh PN, Sabaté J, et al. Vegetarian dietary patterns and mortality in Adventist Health Study 2. JAMA Intern Med. 2013;173(13):1230-8. doi: 10.1001/jamainternmed.2013.6473. PMID: 23836264

6. Craig WJ. Health effects of vegan diets. Am J Clin Nutr. 2009;89(5):1627S-1633S. doi: 10.3945/ajcn.2009.26736N. PMID: 19279075

7. Melina V, Craig W, Levin S. Position of the Academy of Nutrition and Dietetics: Vegetarian Diets. J Acad Nutr Diet. 2016;116(12):1970-1980. doi: 10.1016/j.jand.2016.09.025. PMID: 27886704

8. Satija A, Bhupathiraju SN, Spiegelman D, et al. Healthful and Unhealthful Plant-Based Diets and the Risk of Coronary Heart Disease in U.S. Adults. J Am Coll Cardiol. 2017;70(4):411-422. doi: 10.1016/j.jacc.2017.05.047. PMID: 28728684

9. Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021;372:n71. doi: 10.1136/bmj.n71. PMID: 33782057

10. Wells GA, Shea B, O'Connell D, et al. The Newcastle-Ottawa Scale (NOS) for assessing the quality of nonrandomised studies in meta-analyses. Ottawa: Ottawa Hospital Research Institute; 2014.

11. Sterne JAC, Savović J, Page MJ, et al. RoB 2: a revised tool for assessing risk of bias in randomised trials. BMJ. 2019;366:l4898. doi: 10.1136/bmj.l4898. PMID: 31462531

12. Shea BJ, Reeves BC, Wells G, et al. AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. BMJ. 2017;358:j4008. doi: 10.1136/bmj.j4008. PMID: 28935701

13. Tonstad S, Butler T, Yan R, Fraser GE. Type of vegetarian diet, body weight, and prevalence of type 2 diabetes. Diabetes Care. 2009;32(5):791-6. doi: 10.2337/dc08-1886. PMID: 19351712

14. Yokoyama Y, Nishimura K, Barnard ND, et al. Vegetarian diets and blood pressure: a meta-analysis. JAMA Intern Med. 2014;174(4):577-87. doi: 10.1001/jamainternmed.2013.14547. PMID: 24566947

15. Wang F, Zheng J, Yang B, et al. Effects of Vegetarian Diets on Blood Lipids: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. J Am Heart Assoc. 2015;4(10):e002408. doi: 10.1161/JAHA.115.002408. PMID: 26508743

16. Barnard ND, Cohen J, Jenkins DJ, et al. A low-fat vegan diet and a conventional diabetes diet in the treatment of type 2 diabetes: a randomized, controlled, 74-wk clinical trial. Am J Clin Nutr. 2009;89(5):1588S-1596S. doi: 10.3945/ajcn.2009.26736H. PMID: 19339401

17. Kahleova H, Levin S, Barnard ND. Vegetarian Dietary Patterns and Cardiovascular Disease. Prog Cardiovasc Dis. 2018;61(1):54-61. doi: 10.1016/j.pcad.2018.05.002. PMID: 29800598

18. Key TJ, Appleby PN, Crowe FL, et al. Cancer in British vegetarians: updated analyses of 4998 incident cancers in a cohort of 32,491 meat eaters, 8612 fish eaters, 18,298 vegetarians, and 2246 vegans. Am J Clin Nutr. 2014;100 Suppl 1:378S-85S. doi: 10.3945/ajcn.113.071266. PMID: 24898223

19. Qian F, Liu G, Hu FB, Bhupathiraju SN, Sun Q. Association Between Plant-Based Dietary Patterns and Risk of Type 2 Diabetes: A Systematic Review and Meta-analysis. JAMA Intern Med. 2019;179(10):1335-1344. doi: 10.1001/jamainternmed.2019.2195. PMID: 31329220

20. Dinu M, Abbate R, Gensini GF, Casini A, Sofi F. Vegetarian, vegan diets and multiple health outcomes: A systematic review with meta-analysis of observational studies. Crit Rev Food Sci Nutr. 2017;57(17):3640-3649. doi: 10.1080/10408398.2016.1138447. PMID: 26853923

21. Glenn AJ, Viguiliouk E, Seider M, et al. Relation of Vegetarian Dietary Patterns With Major Cardiovascular Outcomes: A Systematic Review and Meta-Analysis of Prospective Cohort Studies. Front Nutr. 2019;6:80. doi: 10.3389/fnut.2019.00080. PMID: 31231655

22. Tantamango-Bartley Y, Jaceldo-Siegl K, Fan J, Fraser G. Vegetarian diets and the incidence of cancer in a low-risk population. Cancer Epidemiol Biomarkers Prev. 2013;22(2):286-94. doi: 10.1158/1055-9965.EPI-12-1060. PMID: 23169929

23. Huang T, Yang B, Zheng J, Li G, Wahlqvist ML, Li D. Cardiovascular disease mortality and cancer incidence in vegetarians: a meta-analysis and systematic review. Ann Nutr Metab. 2012;60(4):233-40. doi: 10.1159/000337301. PMID: 22677895

24. Mishra S, Xu J, Agarwal U, Gonzales J, Levin S, Barnard ND. A multicenter randomized controlled trial of a plant-based nutrition program to reduce body weight and cardiovascular risk in the corporate setting: the GEICO study. Eur J Clin Nutr. 2013;67(7):718-24. doi: 10.1038/ejcn.2013.92. PMID: 23695207

25. Turner-McGrievy GM, Davidson CR, Wingard EE, Wilcox S, Frongillo EA. Comparative effectiveness of plant-based diets for weight loss: a randomized controlled trial of five different diets. Nutrition. 2015;31(2):350-8. doi: 10.1016/j.nut.2014.09.002. PMID: 25592014

26. Huang RY, Huang CC, Hu FB, Chavarro JE. Vegetarian Diets and Weight Reduction: a Meta-Analysis of Randomized Controlled Trials. J Gen Intern Med. 2016;31(1):109-16. doi: 10.1007/s11606-015-3390-7. PMID: 26138004

27. Wright N, Wilson L, Smith M, Duncan B, McHugh P. The BROAD study: A randomised controlled trial using a whole food plant-based diet in the community for obesity, ischaemic heart disease or diabetes. Nutr Diabetes. 2017;7(3):e256. doi: 10.1038/nutd.2017.3. PMID: 28319109

28. Kahleova H, Fleeman R, Hlozkova A, Holubkov R, Barnard ND. A plant-based diet in overweight individuals in a 16-week randomized clinical trial: metabolic benefits of plant protein. Nutr Diabetes. 2018;8(1):58. doi: 10.1038/s41387-018-0067-4. PMID: 30405108

29. Slavin JL. Dietary fiber and body weight. Nutrition. 2005;21(3):411-8. doi: 10.1016/j.nut.2004.08.018. PMID: 15797686

30. Kahleova H, Tura A, Hill M, Holubkov R, Barnard ND. A Plant-Based Dietary Intervention Improves Beta-Cell Function and Insulin Resistance in Overweight Adults: A 16-Week Randomized Clinical Trial. Nutrients. 2018;10(2):189. doi: 10.3390/nu10020189. PMID: 29425120

31. World Cancer Research Fund/American Institute for Cancer Research. Diet, Nutrition, Physical Activity and Cancer: a Global Perspective. Continuous Update Project Expert Report; 2018.

32. Tuso PJ, Ismail MH, Ha BP, Bartolotto C. Nutritional update for physicians: plant-based diets. Perm J. 2013;17(2):61-6. doi: 10.7812/TPP/12-085. PMID: 23704846