Effect of vegan diet on cardiovascular health

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Abstract

Cardiovascular disease (CVD) is the leading cause of death globally, and in the United States, regardless of socioeconomic strata. Current diet guidelines in the US endorse the consumption of animal products, but research show retrospective, prospective and cross-sectional studies that a vegan diet is more effective at reducing BP, cholesterol, blood sugar levels, and body mass index (BMI) as compared to a non-vegan diet. This paper will focus on the benefits of a vegan diet (I) in reducing CVD risk (O) in adults (P) as compared to a non-vegan diet (C). It is the hope that increased focus on the benefits of a vegan diet will lead to amendments to global dietary guidelines and ultimately to better health outcomes.

Introduction

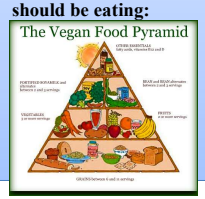
What is CVD?
A group of disorders of the heart and blood vessels, like coronary artery disease (CAD) and valvular disease.

Risk factors: High blood pressure, high cholesterol, obesity, diabetes. Diet has the greatest impact on these risk factors!

Statistics: 2/3 Americans are obese. An American dies every 37 seconds from CVD (1 in 4 deaths, 650,000 deaths per year).

What are we eating?

What the research shows we should be eating:



Methods

Literature search:
PubMed, Google Scholar

Search terms: vegan AND diet AND hypertension or HTN or high blood pressure"

Exclusion criteria: 1. Meta analyses, 2. Older than 20 years, 3. Did not discuss the vegan diet in relation to HTN.

Inclusion criteria: 1. RCT/retrospective studies, 2. Study subjects were adults, 3. Published within 20 years and in peer reviewed journal.

Results

- **There is robust evidence that vegan diet helps reduce cardiovascular risk.**
- **Mcdougall et al, 2017:** Retrospective analysis, 1,615 participants received nutrition education and vegan diet for 10 days. Significant decrease in cholesterol, weight, systolic and diastolic blood pressure, blood glucose, BUN/CR after a week. 80% of patients on medication reduced their medication dosage or discontinued treatment entirely.
- **Jenkins D, et al., 2015**: Six-month RCT with 241 participants to compare how effective a vegan diet is at lowering blood pressure and cardiovascular risk as compared to the DASH diet. Systolic and diastolic BP were reduced on the vegan diet, not the DASH diet.
- **Lajous M, et al., 2014**: Retrospectively tracked self-reported diet habits of 44,616 female participants over 18 years. Consumption of processed meat significantly increased the risk of developing HTN.
- **Appleby PN, et al., 2002**: Cross-sectional study with 11,004 participants found that meat eaters had the highest prevalence of hypertension and vegans the lowest, with fish eaters and vegetarians representing at intermediate values.
- **Campbell et al., 2019:** Retrospective analysis of 8 week program; 79 participants ate a whole-food plant-based diet. The intervention was found to significantly improve the cardiovascular biomarkers of patients. Twenty one (26.9%) participants decreased their dosage or stopped at least one chronic medication. Systolic and diastolic blood pressure and total cholesterol significantly decreased.
- **Jakše B. et al., 2019:** RCT, 151 participants had been on animal rich diets before study. Participants were randomly allocated into a short-term diet adherence group (0.5-2 years), medium (2-5 years) and long-term (5-10 years) group. Analysis revealed that being on a short term yielded a significant decrease in systolic BP, but that there was no significant difference between the short, medium and long-term groups.

Note: *p=.005

Discussion

The results of five of six studies discussed in this meta-analysis suggest that the vegan diet may be a promising alternative to both carniverous and vegetarian diets. Despite the weaknesses in study design in some studies, like the scarcity of RCTs. it is important to note that none of the studies reported any negative effects of eating a vegan diet during the intervention period. The cumulative significant and positive results of the meta-analysis warrant more robust research to further explore whether vegan diets are healthier, and whether they can be used to treat patients clinically. While encouraging, this meta-analysis highlights the need for further research. Further studies should ideally be randomized control trials with close observation of participants. This would address two major weaknesses of the literature.

Conclusion

More research needs to be done on how the vegan diet affects cardiovascular risk. The majority of studies are retrospective or cross sectional, which is a weakness. However, the preliminary data presented on this poster strongly supports the conclusion that vegan diet significantly decreases CVD risk. We should be talking about this in the medical community, and learning about it in schools. Let's start the conversation!

Table 1. Results summary

Study	Reduction in total cholesterol, HDL/LDL	Decrease in SBP	Decrease in DBP	Total significance
Mcdougall et al.	S	S	S	S
Lajous et al.	NA	NS	SS	SS
Jenkins et al.	NA	S	S	S
Jakše B., Pinter S., et al.	NA	S	NS	S
Appleby et al.	NA	S	NS	NS
Campbell et al.	S	S	S	S

Key: S = Statistically Significant, NS = Not Significant, NA = Results Not Available