

## Introduction

Heart disease is America's number one killer.<sup>1</sup> Coronary artery disease (CAD) is the most common type of heart disease. Every year 659,000 people die from heart disease in the United States.<sup>2</sup> A vegan diet excludes all animal products: therefore, all nutrients are gained through plant foods. This type of diet emphasizes whole foods such as legumes, vegetables, fruits, nuts, seeds, grains, pastas and dairy alternatives.

## Methods

To find relevant and trustworthy articles on this topic, the Journal of the Academy of Nutrition and Dietetics, Google Scholar, and the PubMed database were used. Keywords used to narrow down the article findings were: "vegan", "heart disease", "cardiovascular disease", "cholesterol", and "diet". The objective was to find studies that required participants to follow a vegan diet, track the risk and progression of heart disease, and study the nutritional adequacy of the diet.

## Findings

### Blood Pressure BMI/Body Fat Percentage

Among seven clinical trials analyzed in 2014, a vegan diet was found to reduce systolic and diastolic blood pressure by an average of 4.8- and 2.2-mm Hg respectively. In 32 cross-sectional studies, vegans had a lower systolic and diastolic pressure by 6.9- and 4.7-mm Hg respectively. The Adventist Health Study-2, 2013, collected data on average BMI values of diet groups. The vegan group had the lowest BMI at an average of 24.1. The highest BMI was in the non-vegan group with a BMI average of 28.3. Body fat percentages in vegan groups were also lower by 6% in the United States.<sup>11</sup>

### Inflammation

In the study, "Anti-Inflammatory Effects of a Vegan Diet Versus the American Heart Association-Recommended Diet in Coronary Artery Disease Trial" published on November 27, 2018, the authors studied the high-sensitivity C-reactive protein (hs-CRP) levels when following a vegan diet. Patients who followed a vegan diet resulted in a 32% lower hs-CRP when compared to the patients who followed the diet from the AHA.<sup>8</sup>

# A VEGAN DIET AND ITS EFFECT ON CARDIOVASCULAR DISEASE IN ADULTS

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## Cholesterol

In another study, the researchers tested whether levels of atherogenic lipids and lipoproteins differed significantly following consumption of diets with high red meat content compared with diets with similar amounts of protein derived from white meat or nonmeat sources and whether these effects were modified by concomitant intake of high compared with low saturated fatty acids (SFAs). The results were, LDL cholesterol and apolipoprotein B-100 (apoB) were higher with red meat than with nonmeat. White meat and red meat were shown to have nonsignificant differences on CVD risk, while plant-based protein sources showed a lower risk in CVD risk.<sup>1</sup>



## Limitations

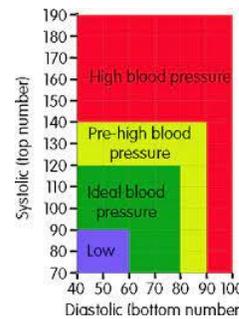
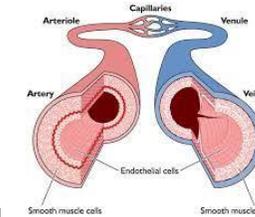
Following a vegan diet requires nutritional education making it hard to consistently have a population follow it without gaining nutritional and preparation knowledge. Data can also be quickly dismissed by individuals and a negative demeanor can surround the idea of a vegan diet in society. Participants in the studies had to ensure nutritional adequacy by consuming a variety of foods. Some participants were highly motivated to change and adhere to the changes which puts a barrier up for individuals who are not ready to change.

## Implications

Diet and lifestyle changes are strongly encouraged when individuals get diagnosed with CVD. A vegan or mostly plant-based diet will lower blood pressure, blood cholesterol, BMI and body fat percentage with just the diet change alone. Data has become sound enough so clinical practices should start to introduce patients to this diet or at least inform them so they may have the chance to improve or even reverse the condition. Early adult and adolescent education about vegan nutrition could prove to be beneficial by decreasing the rate of CVD diagnosis in the United States.

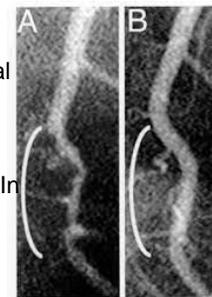
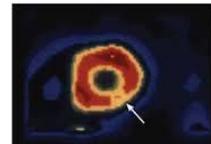
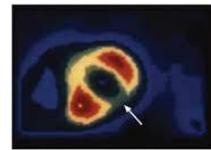
## Endothelial Cells

Endothelial cell function has a direct impact on vascular health. These cells line the blood vessels and the heart in the body and control coagulation, blood flow, passage of proteins and controls inflammatory response.<sup>1</sup> Vascular endothelial cells (VECs) were shown to have protective benefits from a plant-based diet. The low levels of trimethylamine-N-oxide (TMAO) in a plant-based diet were shown to inhibit atherogenesis because of the lower levels in the body. These findings suggest that endothelial function is a surrogate marker of CAD risk and development.<sup>15</sup>



## Reversal of CAD and Risk of CVD

Another study analyzed was published in July 2014, "A Way to Reverse CAD." the researchers were able to reverse CAD in thirty-two months and restore myocardial perfusion in only three weeks.<sup>6</sup> Out of the 198 patients, 177 were adherent and during this time, there was only one stroke. This study provides strong evidence that a vegan diet can stop the progression and reverse CAD. "In the European Prospective Investigation into Cancer and Nutrition study, vegetarians have a 32% lower risk of developing coronary heart disease, compared to non-vegetarians."<sup>7</sup>



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