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Narrative Review : Diet Patterns Against Coronary Artery Disease

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ABSTRACT
Coronary Artery Disease (CAD) is the term for the buildup of plaque in the heart arteries which can cause a heart attack. Dieting is a person's conscious effort to limit and control the food they eat with the aim of reducing or maintaining body weight. The aim of the research is to determine the effect of dietary patterns on CAD using research database searches used in Pubmed, Science Direct, and Google Scholar over the last 5 years using the narrative review method. From the 9 journals examined, it was found that dietary patterns influence the risk of CAD. The reviewed evidence suggests that it is important to consider total dietary patterns for heart disease prevention. Dietary pattern-based research findings can be used to reduce risk factors for heart disease.

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INTRODUCTION

Coronary Artery Disease (CAD) is the term for the buildup of plaque in the heart arteries which can cause a heart attack. This buildup of plaque in the coronary arteries is called atherosclerosis. A decrease in blood supply to the heart muscle causes an imbalance between oxygen supply and demand. In the end, this imbalance will cause heart pump problems and affect the body systemically.

Data from the World Health Organization (WHO) in 2017 states that cardiovascular disease is still a global threat and is a disease that plays a major role as the number one cause of death throughout the world. Based on 2011-2014 NHANES data, an estimated 16.5 million Americans aged ≥ 20 have a history of CAD, which is approximately 6.3%. The prevalence of CAD sufferers is higher for men, namely 7.4%, than for women, namely 6.3%. And NHANES data shows that between 2001-2012, the prevalence of CAD by age decreased from 10.3% to 8.0%.

In Indonesia, heart and blood vessel disease continues to increase and will cause a burden of pain, disability and socio-economic burden for sufferers' families, society and the country. The prevalence of CAD in Indonesia in 2013 based on a doctor's diagnosis was 0.5%. Meanwhile, based on the doctor's diagnosis, the symptoms were 1.5%. Meanwhile, based on data from the Indonesian Ministry of Health's data and information center, it shows that CAD is in the seventh highest position for NCDs (non-communicable diseases) in Indonesia.

Treatment Heart disease can be treated with medication and accompanied by cardiac rehabilitation. In cardiac rehabilitation, there are several interventions carried out by

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physiotherapy with the aim of making the patient able to return to carrying out daily activities.

Dieting is a person's conscious effort to limit and control the food they eat with the aim of reducing or maintaining body weight. Excessive dieting behaviors such as excessive exercise, consuming laxatives or diuretics, excessively restricting food consumption, and intentionally vomiting food have a greater risk of developing eating disorders. In short, unhealthy dietary patterns are directly related to CAD risk. Investigation of dietary patterns provides important and useful information about patterns among people. The reviewed evidence suggests that it is important to consider total dietary patterns for heart disease prevention. Dietary pattern-based research findings can be used to reduce risk factors for heart disease. Diet recommendations should be based on foods and dietary patterns, not nutritional targets.

A 2013 systematic review and meta-analysis of prospective observational studies examining >144,000 adults reported that Diets such as DASH (Dietary Approaches to Stop Hypertension) were associated with a significant reduction in the incidence of cardiovascular disease including coronary heart disease and stroke (19-21%) and heart failure (29%) (Salehi-Abargouei et al., 2013). Based on a systematic review and meta-analysis by Chiavaroli et al. (2019), the DASH diet pattern is associated with a reduced incidence of cardiovascular disease (RR, 0.80 (0.76 - 0.85), coronary heart disease (0.79 (0.71 - 0.88), stroke (0, 81 (0.72 - 0.92)), and diabetes (0.82 (0.74 - 0.92)) in a prospective cohort study.

METHOD

This research was conducted using the Literature Review method with a Narrative Review approach. The research was conducted by narratively reviewing articles related to diet patterns and coronary artery disease. The articles used are secondary data obtained using databases such as Pubmed, Science Direct, and Google Scholar.

RESULT

Based on the search results, 67 articles were obtained from the keyword search "Diet patterns and coronary artery disease". All journals were selected and then filtered, then the researchers screened the titles and abstracts of articles that contained dietary patterns for coronary artery disease. At the screening stage, 9 articles were found to be excluded according to the inclusion criteria or published in the last 5 years. The final results of the search and filtering obtained 9 relevant articles used for this literature review.

Table 1. Literature Review Articles

No	Researcher	Years	Method	Number of Samples	Results
1	Esmaeel Gholizadeh, dkk	2020	Case Control	370	Main dietary pattern: "Mediterranean diet" for example fruit, green leafy vegetables, other vegetables, nuts, coffee. Foods that are not recommended as

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No	Researcher	Years	Method	Number of Samples	Results
					"Western food" include desserts, snacks, nuts, honey or jam, soy sauce, mayonnaise, yellow vegetables, potatoes, red meat, refined grains; "Fast food" for example soft drinks, fast food, dairy products.
2	Yukihiko Momiyama, dkk	2022	Kuantitatif	802	The main dietary patterns of Japanese society are fish, plant foods, such as soy products; and green tea.
3	Muhammad Kamran Hanif, dkk	2022	Case control	500	The main finding was that consumption of ghee was not associated with CAD risk, whereas consuming chicken, beef, eggs and fast food was associated with a high risk of CAD.
4	Taslima Khatun, dkk	2021	Case control	210	Recommended diet foods are fruit, fat-free milk, yogurt and vegetables, while foods that are not recommended are junk food, meat and eggs.
5	Til Bahadur Basnet, dkk	2020	Case control	612	The recommended diet foods are: B-carotene and vitamin C, while foods that are not recommended are carbohydrates, total fat/oil, unsaturated fatty acids (SFA), and saturated fatty acids (SFA)
6	Toshiki Kaihara, dkk	2023	Studi terkontrol secara acak	446	This research only emphasizes diet knowledge and increasing nutritional knowledge. This supports the implementation of the Mediterranean diet.
7	Mohamed Kuhail, dkk	2021	Cross-Sectional Study	423	The main dietary pattern consists of a high intake of fruit, fish, poultry, vegetables, and whole grains. Meanwhile, diet patterns that are not recommended include foods high in sugar and sweet foods, soft drinks, salt, cooking oil and processed meat.
8	Maria Dimitriou, dkk	2023	Case control	1017	The recommended diet pattern is a vegetarian type pattern such as vegetables, beans and potatoes (boiled, baked or crushed), while the diet pattern that is not recommended is a Western type pattern such as red meat, processed meat, French fries and fast food.
9	Pramila Gaudel, dkk	2022	Pre-test post-test control group	224	Recommended diet foods include fresh fruit, vegetables, various whole grain products, lean meat, fish, peas, nuts, low-fat dairy products, and

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No	Researcher	Years	Method	Number of Samples	Results
					Foods rich in fiber, while diet foods that are not recommended are sweet foods and high salt intake.

Discussion

Coronary Artery Desease (CAD) is the narrowing or blockage of the coronary arteries, the arteries that supply blood to the heart muscle. If blood flow slows, the heart does not get enough oxygen and nutrients. This usually results in chest pain called angina. When one or more of the coronary arteries is completely blocked, the result is a heart attack and damage to the heart muscle.

Several journals have several similarities regarding dietary patterns for coronary artery disease. Most of the journals state that vegetarian food is the main dietary pattern, namely vegetables (journals 1, 2, 4, 7, 8), followed by fruit (journals 1, 2, 4, 7), nuts (journals 1, 7, 8), fish (journals 2, 3, 7), milk (journals 3, 4), seaweed (journal 3), tea (journal 2), while journal 5 only mentions foods that are high in b-carotene and vitamin C, journal 6 only discusses diet knowledge, and journal 9 discusses diet risks. Some foods to avoid include foods high in sugar, red meat, processed meat, French fries and fast food.

Vegetables

Some vegetables such as spinach, mustard greens and broccoli have high levels of fiber and antioxidants so they are good for reducing the risk of coronary heart disease. Previously, heart patients were advised not to consume green vegetables at all. However, based on recent research, it has been found that regular consumption of small doses of vitamin K does not cause changes in the blood clotting profile in the bodies of patients who take the blood thinning drug warfarin. Vitamin K in small doses has been found to have a good effect on heart disease patients who take warfarin.

Heart disease sufferers who regularly consume warfarin are advised to consume vitamin K in small doses regularly, namely 90-140 micrograms per day. Vitamin K can be obtained from consuming half to one cup of green vegetables a day. Just as excess of anything is not good, so is the consumption of green vegetables in heart patients on blood thinning medication. There is no harm in continuing to consume green vegetables. The thing that must be taken care of is not to let the amount be excessive.

Fruits

Fruit also contains fiber and antioxidants which are good for heart health. Antioxidants work to capture free radicals and release their own electrons, thereby preventing oxidation by free radicals which can damage other molecules. Some fruits that are good for heart health are apples, grapes, tomatoes and oranges. The American Heart Association stated that from NHANES 2005 - 2008 data, the behavior of Americans consuming fruit ranges from 1.1 - 1.8 portions per day, and consuming vegetables at 1.3-2.2 portions per day. Meanwhile, teenagers 5-9 years old consume 1.5 servings of fruit,

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teenagers 10-14 years old 1.3 servings, and teenagers 15-19 years old 0.9 servings. Each daily serving of fruit reduces the risk of heart disease by 4%.

Nuts

Nuts contain lots of vitamins, minerals, heart-healthy monounsaturated fats and are low in saturated fat. Several types of nuts such as peanuts, almonds, black beans, soybeans and hazelnuts are sources of good fats or unsaturated fats which are useful for lowering bad cholesterol levels in the body.

Fish

One of the foods that is good to consume to prevent the body from heart disease is fish. By consuming fish regularly, you can reduce the risk of heart disease. Consuming at least two servings of raw fish or around 3.5 ounces per week can have a good impact on your health. The omega 3 fatty acid content in fish can reduce a person's risk of developing heart disease. Apart from that, the source of protein and nutrients in fish is very good for growing children, as well as pregnant and breastfeeding mothers.

In addition, the omega-3 content in certain fish can decrease. In tuna, the omega-3 content can decrease by 75-80 percent. Then, salmon will also experience a decrease in vitamin D content if it is processed by frying. Fish should be prepared by boiling, steaming or grilling. When fish is processed by steaming or boiling, the calories and good fat content it contains will not be reduced. This method is also carried out at low temperatures, so that the nutrients it contains remain optimal and avoid the chemicals it may contain.

Milk

Especially for milk for heart health, make sure it contains omega-3 and omega-6. Omega-3 can increase good cholesterol, reduce plaque formation in blood vessels, high blood pressure and triglycerides. Meanwhile, omega-6 can reduce inflammation.

CONCLUSSION

Based on the literature study that has been carried out, it is concluded that dietary patterns influence the risk of CAD. The evidence reviewed suggests that it is important to consider total dietary patterns for heart disease prevention. Dietary pattern-based research findings can be used to reduce risk factors for heart disease. Further research needs to be done on dietary patterns for coronary artery disease using different methods to see whether there are differences in dietary patterns for coronary artery disease using other methods and using the Food Frequency Questionnaire.

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