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### Importance of plant-based diet

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**Abstract**  
A vegetarian diet excludes meat, fish, eggs, and dairy products. It is common for vegetarians to follow a plant-based diet like that as a means of preventing or treating illness. A vegetarian diet can reduce the risks of chronic diseases like obesity, cardiovascular disease, and cancer by increasing the consumption of vegetables, grains, fruit, nuts, and fiber and reducing saturated fat and cholesterol intake. Plant-based diets, however, are considered by some to increase the risk of nutritional deficiencies. For vegetarians, fortified foods or supplements can help them meet their dietary requirements by carefully arranging their diet and consistently ingesting them. Providing information about the health benefits and recommendations of a plant-based diet to people considering becoming vegetarians, we carefully describe and analyze the relations between vegetarian diets and BMI, obesity, and cardiovascular disease, followed by the relationship between vegetarian diets and mortality from the most common causes of death and cancer.

**Keywords:** Plant-based, diet, fish, eggs, BMI

#### Introduction

Vegetarian diets are on the rise around the world. The United Kingdom is estimated to save approximately 40 000 lives yearly from diseases such as IHD (ischemic heart disease) through a vegetarian diet. (Key, T.J., 1999)<sup>[1]</sup> It has been shown that the diet plan positively impacts health. According to studies and data, a vegetarian diet can reduce the risk of developing certain chronic conditions. Molecular mechanisms and principles of vegetarian diets are now hot topics. According to this report, a vegetarian diet lowers BMI (body mass index) and reduces obesity risk. (Leitzmann, C.J.F.o.N, 2005)<sup>[2]</sup> According to the study, persons who have or want to avoid cardiovascular disease benefit from a vegetarian diet since it contains more dietary fiber and less saturated fat than a non-vegetarian diet. (Marsh, K., 2011)<sup>[3]</sup> This article also investigates the implications of a vegetarian diet on cancer. Furthermore, because many people are concerned about the possibility of malnutrition when adopting a vegetarian diet, this report includes information about calcium, iron, and B12, three nutrients that show that if a vegetarian diet is carefully structured, it can be beneficial to individuals at all stages of life cycles.

#### Literature review

In recent years, people worldwide have become increasingly interested in plant-based diets, especially in the stricter form. Some people follow vegetarian diets because of their beliefs, and then they believe it is extremely healthy and effective. Part of the reason is the potential advantages of this diet and the growing concerns about environmental and animal welfare. Scientists, doctors, and biochemists have discussed the benefits of vegetarianism. Even though their disagreements persist, the outcomes have been positive. This literature review focuses on analyzing the health advantages and problems of this eating, considering the possibility of extending people's lifetime and preventing cardio-metabolic disorders. There are several reasons to consume more plant-based meals instead of meat.

#### Methodology

##### Study area

The prevalence of different barriers to following a plant-based diet, as well as consumer profiles considering socio-demographics, values, and meat consumption frequencies, are discussed in this article.

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## Definition and classification of vegetarian

People's diets vary depending on their lifestyles, health issues, and religions. Vegetarians do not consume meat, eggs, or milk in their diet and instead eat plants such as vegetables, fruits, nuts, legumes, and grains. In truth, there are several sorts of vegetarians, the most common of which are lacto-ovo-vegetarian, lactovegetarian, ovo-vegetarian, and vegan. The terms "lacto" and "ovo" refer to dairy products and eggs. So a Lacto-ovo-vegetarian eats a plant-based diet that exempts meat, fish, and poultry but contains eggs and dairy products. A Lacto-vegetarian eats a plant-based diet that exempts meat, fish, eggs, and poultry but contains dairy; an Ovo-vegetarian diet exempts meat, fish, dairy, and poultry but contains eggs; a Pesco-vegetarian eats fish and seafood in addition to plants, and a vegan (Craig, W.J., 2009) [4] People select a vegetarian diet mostly because they wish to live a longer life. According to studies, vegetarians had a lower mean BMI and a substantially lower plasma cholesterol content when compared to non-vegetarians, both of which are among the leading causes of mortality. Based on experimental findings, researchers have proposed that a vegetarian diet may benefit the avoidance of obesity, type II diabetes, cardiovascular disease, and cancer. (Appleby, P.N., 1998, Jenkins David) [5] Because a plant-based diet is lower in saturated fat and cholesterol and higher in dietary fiber, magnesium, potassium, vitamins C and E, folate, carotenoids, flavonoids, etc. compared to a non-vegetarian diet. Omnivores have the highest cholesterol level (208.0949.04 mg/dl), whereas vegans have the lowest level (141.0630.56 mg/dl).

## Role of a vegetarian diet in controlling the disease.

Previous studies have repeatedly demonstrated the positive influences of a vegetarian diet on chronic disease management. A thorough evaluation of the impact of a diet on obesity, type 2 diabetes, cardiovascular disease, and cancer are presented here. A vegetarian diet has a more significant amount of vegetables, grains, fruit, nuts, and fiber and a smaller amount of saturated fat and cholesterol, so it has a strong effect on losing weight and lowering the risks of chronic diseases like obesity and heart disease, as well as potential effects on cancer.

## Obesity

Obesity is becoming increasingly common nationally and globally (Kuczmarski *et al.*, 1994) [7], and obese persons are typically advised to prepare a diet high in fiber and low in saturated fat. Lower BMI has been connected with vegetarian eating patterns, and BMI grew as the amount of meat intake increased in both men and women. According to the findings of cohort research involving 22434 men and 38469 women, the mean BMI was lowest among vegans ( $23.6 \text{ kg/m}^2$ ) and gradually higher in lacto-ovo-vegetarians ( $25.7 \text{ kg/m}^2$ ), pesco-vegetarians ( $26.3 \text{ kg/m}^2$ ), semi-vegetarians ( $27.3 \text{ kg/m}^2$ ), and non-vegetarians ( $28.8 \text{ kg/m}^2$ ). (Tonstad, S. *et al.*, 2009) [8] Non-meat eaters have a lower BMI than meat eaters, which is partly attributable to higher dietary fiber consumption, lower animal fat consumption, and, in males exclusively, a lesser amount of alcohol consumed in their meals. Clinical trial evidence suggests that vegetarian diets may be beneficial for preventing and managing weight-related diseases. According to studies, vegetarian diets, particularly vegan diets, tend to be advantageous for weight loss. However,

these advantages appear to fade over time. (Barnard, N.D. *et al.*, 2015) [9].

## Type 2 Diabetes

Type 2 diabetes is caused by insulin deficiency combined with long-term insulin resistance, affecting about 29 million individuals in the USA. Curing type 2 diabetes has always been a difficulty. People with diabetes must exercise caution when it comes to carbohydrate consumption. A vegan diet high in fiber has a lower glycemic index and a low to moderate glycemic load. (Huang, R.Y. *et al.*, 2016) [10] Some data suggest vegetarians have lower insulin resistance and better insulin sensitivity than non-vegetarians. (Fukagawa, N.K. *et al.*, 1990) [11] Higher intakes of vegetables, whole grain foods, legumes, and nuts have been linked to a decreased exposure to insulin resistance and type 2 diabetes, as well as improved glycemic control in insulin-resistant individuals. (Waldmann, A. *et al.*, 2007) [12] Also, processed meats such as bacon and hotdogs may raise the risk of diabetes, presumably due to their nitrite content. A study is also being undertaken to evaluate the association between a vegetarian diet and the occurrence of diabetes in various BMI categories. Diabetes was found in 8.0 percent of vegans, 9.4 percent of Lacto-ovo vegetarians, 10.4 percent of pesco-vegetarians, 11.6 percent of semi-vegetarians, and 14.0 percent of non-vegetarians with BMIs of  $30 \text{ kg/m}^2$ . For BMIs of  $30 \text{ kg/m}^2$ , the prevalence in the groups was 2.0 percent, 2.1 percent, 3.3 percent, 3.7 percent, and 4.6 percent, respectively. Because the high carbohydrate and low-fat content of vegetarian diets might boost cellular sensitivity, giving some resistance to diabetes.

## Cardiovascular disease

According to extensive cohort studies, vegetarians had a decreased chance of developing cardiovascular disease (CVD) and coronary death. A meta-analysis of five prospective studies found that vegetarians have a 24% lower risk of dying from ischemic heart disease (IHD) than non-vegetarians, with Lacto-ovo vegetarians showing a 34% lower risk and vegans having a 26% lower risk. Findings also demonstrate that vegetarian diets centered on fruits, leafy vegetables, and nuts can reduce low LDL cholesterol levels by 25-30% in healthy adults (Key, T.J. *et al.*, 1999) [1] and that phytochemicals included in vegetables can serve as antioxidants to inhibit blood clotting and platelet aggregation. According to another relevant study, a vegetarian diet decreased saturated fat intake and greater consumption of soluble fiber, whole grains, etc., mostly would add to its cardiovascular advantages. Furthermore, meat in a non-veg diet is linked to a higher probability of coronary heart disease (CHD). As a result, it's plausible to believe that a plant-based diet can help avoid chronic diseases like CVD.

## Cancer

Cancer is a leading cause of death worldwide, and many experts are working to find a treatment. Some studies prove that a plant-based diet may reduce the incidence of lung, colon, breast, prostate, and stomach cancer, but the findings are not compelling, and further research is needed. (Bernstein, A.M., *et al.*, 2010) [14]. Findings suggest that vegetarians' high fiber intakes may play an important role in reducing colon cancer risk because the bulking effect of fiber may increase the transit rate of carcinogens through the

bowel, thereby further minimizing the surface contact vulnerability of carcinogens with the bowel wall, leading some to conclude that in populations with a low fiber intake, doubling the fiber intake could reduce colorectal cancer by 40%. However, this idea remains contentious because evidence contradicts prior results that dietary fiber intakes are not directly associated with the risk of colorectal cancer, and further research and tests are required. (Slavin and J.J.P.N. Soc, 2003) [15].

### **Nutritional adequacy in a vegetarian diet**

Although vegetarian diets have many health benefits, such as preventing chronic diseases such as obesity, CVD, and diabetes, people are concerned about the nutrients present in a plant-based diet because some nutrients may be more challenging to acquire from a plant-based diet than from a meat-based diet. Nonetheless, studies show that as long as individuals plan their meals properly and utilize fortified foods or supplements regularly, a vegan diet may be nutritious for their needs.

### **Iron**

Iron is essential for synthesizing hemoglobin and myoglobin, which transport oxygen in the blood and muscle. Because nonheme (inorganic) Fe from plant sources absorbs less efficiently than heme Fe from animal sources, many people are concerned about how much Fe may be obtained on a vegetarian diet. Meals that promote iron absorption are often of animal origin, whereas foods that restrict iron absorption are mostly of plant origin. Vegetarian people have lower iron storage than non-vegetarians, according to research, yet most studies demonstrate that ferritin levels are within a reasonable range. (Herrmann, W., 2002) [16]. In reality, vitamin C and other organic acids contained in vegetables and fruit can promote iron absorption and diminish the inhibitory effects of phytate, hence improving iron status. (Ball, M.J., 1999) [17].

### **Calcium**

Calcium is essential for bones, muscle, blood coagulation, and neuron function. Lactoovo-vegetarian calcium intakes are comparable to or greater than those of meat-eaters. However, vegan calcium intakes are less than either grouping and may drop below-recommended levels. (Freeland-Graves, 1988) [18] Although oxalates, phytates, and fiber in plant diets reduce calcium availability, studies have shown that calcium absorption from many plant foods is excellent. As a result, compared to non-vegetarians, lactovegetarians appear to be at increased risk of osteoporosis. In contrast, vegans appear at more risk of not achieving their calcium needs, particularly during the rapid development period. (Messina V, M.R., 2004) [19]. Many vegans may find it simpler to achieve their calcium requirements if calcium-fortified meals or dietary supplements are used. (Weaver, C.M., 1999) [20].

### **B-12**

Vitamin B-12 is exclusively found in animal-derived foods. The primary sources of vitamin B-12 for people in a non-vegetarian diet include meat, fish, milk, cheese, and eggs, but the primary sources of B-12 are excluded in a vegan diet. Lacto-Ovo vegetarians can receive enough vitamin B-12 through dairy foods, eggs, and other trustworthy sources. At the same time, vegans can only acquire enough vitamin

B-12 from fortified foods such as fortified soy and rice drinks.

Hyperhomocysteinemia is a risk factor for atherothrombotic and dementia and can be exacerbated by vitamin B-12 deficiency. People who follow a strict vegan diet must take supplements and eat B-12 fortified foods, and their vitamin B-12 levels should be checked regularly.

### **Result**

The study's findings reveal that a vegetarian diet benefits your health. Lowering a person's blood pressure, weight, cholesterol, and risk of cardiovascular disease development can all be beneficial. Additionally, it aids in the prevention of fatal chronic conditions like cancer and diabetes. It could also aid in extending the lifetime. However, if the diet is not well organized, it may be detrimental to health. Therefore, further research should demonstrate the advantages of a vegetarian diet. In my opinion, if someone is at risk of contracting a condition like diabetes, cardiovascular disease, kidney stones, or hyperlipidemia, they might think about switching to a vegetarian diet as an alternative to adjuvant medication.

### **Discussion**

A high intake of mostly plant-based foods, such as fruit and vegetables, nuts, and whole grains, is linked to a considerably decreased risk of CVD, according to evidence from prospective cohort studies. These foods' numerous advantageous elements, including mono- and polyunsaturated fatty acids, omega-3 fatty acids, antioxidant vitamins, minerals, phytochemicals, fiber, and plant protein, probably mediate their protective benefits. Additionally, it has been demonstrated that reducing animal protein consumption and switching to a plant-based diet can lower the prevalence of CVD risk factors.

### **Conclusion**

People who choose a vegetarian diet have a lower BMI and cholesterol concentration, which translates into a decreased risk of illnesses such as obesity, cardiovascular disease, and type 2 diabetes. Despite the popularity of such a topic in the scientific area and countless findings from past studies, the consequences of being a vegetarian on diseases such as cancer remain unknown, and more solid proof is needed. If a plant-based diet is well prepared, and fortified foods or supplements are consumed regularly, the vegetarian diet is nutritionally adequate. Consequently, a well-planned vegetarian diet is usually suggested for people who want to reduce their chances of developing certain chronic diseases. Overall, the advantages of a well-balanced vegetarian diet need additional investigation.

### **Recommendation**

Diets based on plants and a lot of fruit and vegetables are rich in potassium and other healthy nutrients. The EAT-Lancet Commission advises consuming much more fruits and vegetables to improve global human health and sustainable food systems. The diet calls for between 200 and 600 grams of vegetables per day (including at least 100 grams per day of each of the following: dark green vegetables, red and orange vegetables, and other vegetables), as well as between 100 and 300 grams of fruit per day. Additional recommendations for additional significant potassium sources include up to 100 grams per

day of starchy vegetables and 232 grams per day of whole grains, such as rice, corn, etc.

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