

A COMPREHENSIVE REVIEW OF THE RISE OF PLANT-BASED DIETS: EXPLORING HEALTH BENEFITS AND NUTRITIONAL CHALLENGES

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Article Received on: 20/10/2024

Article Revised on: 10/11/2024

Article Accepted on: 30/11/2024



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ABSTRACT

Plant-based diets encompass both vegetarianism and veganism, which have been increasingly accepted by people worldwide due to their potential health benefits and sustainability. Such diets emphasize whole foods primarily sourced from plants and have linked them to prevention and protection against chronic diseases such as diabetes, hypertension, and cardiovascular disorders, among others, also conferring improved metabolic health. However, plant-based diets also present several nutritional challenges like some micronutrient deficiencies, specifically vitamin B12, calcium, and omega-3 fatty acids. This review covers the development of plant-based diets, their health consequences, nutritional deficiencies, and their role in playing a part in pressing global health issues such as obesity and metabolic syndrome. In particular, it places special attention on cardioprotective mechanisms by dietary patterns, effects on gut microbiota, and perspective from the environmental sustainability viewpoint. Research directions for the future discuss fine-tuning plant-based diets with regard to nutritional risks and optimization in the heterogenous population.

KEYWORDS: Plant-based diets, chronic diseases, nutritional challenges, metabolic health, sustainability.

INTRODUCTION

In Western nations, plant-based diets, vegetarianism, and veganism are becoming more and more popular. Despite the fact that plant-based diets and vegetarian diets are sometimes confused, they include distinct eating habits. Since it emphasizes eating mostly plant-based foods (fruit, vegetables, nuts, oil, whole grains, and legumes), the word "plant-based" is more inclusive, while it can also refer to limited amounts of foods derived from animals, such as milk, eggs, meat, and fish.^[1] People who eat a plant-based diet may decide to use animal products instead of vegetables, but they are not permanently prohibited from eating animal products. Furthermore, according to some writers, the

Mediterranean diet mostly consists of plant-based foods.^[2] According to the Academy of Nutrition and Dietetics, plant-based dietary patterns—also referred to as plant-forward diets—entirely exclude or substantially decrease animal product consumption while maximizing fruits, vegetables, whole grains, legumes, nuts, and seeds intake. Plant-based dietary patterns, also known as plant-forward diets, maximize intake of fruits, vegetables, whole grains, legumes, nuts, and seeds while completely eliminating or significantly reducing consumption of animal products.^[3] A plant-based diet (PBD), which consists only of plant-based foods and excludes or only infrequently contains processed foods, is viewed by many as a unique and perhaps dangerous dietary option.

When compared to a regular diet, this worry is increased by the possible shortages in micronutrients including calcium, iron, omega 3, and vitamins B12 and D (Bakaloudi *et al.* 2021; Neufingerl and Eilander 2021). However, during the past few decades, a large body of scientific data has emerged that strongly supports the possible health advantages of a PBD. The avoidance of certain chronic non-communicable illnesses, including type 2 diabetes (Jardine *et al.* 2021; Yang *et al.* 2021), hypertension (Joshi, Ettinger, and Liebman 2020; Butnariu *et al.* 2023), dyslipidemia^[10], atherosclerosis, and cancer (Tantamango-Bartley *et al.* 2013; Zhao *et al.* 2022). Because of the bioactive chemicals found in plants, studies on supplementation and natural consumption methods have shown the useful benefits of a PBD, compound such as catechins (Fan, Sang, and Jiang 2017; Musial, Kuban-Jankowska, and Gorska-Ponikowska 2020), anthocyanins^[15], polyphenols^[16], and phytosterols (Ghaedi *et al.* 2020; Bao *et al.* 2022) among others. According to a 2018 nationwide poll conducted in the United States, two-thirds of respondents have cut back on their meat intake during the previous three years. One in eight people in the UK identified as vegetarian or vegan, while 21% of people identify as flexitarians, or vegetarians who occasionally consume animal products. Vegetarians in Germany rose from 1% in 2005 to 7% in 2018; meatless people in Italy grew by 94.4% between 2011 and 2016; while flexitarians in Spain rose by 25% in only two years (Neff *et al.* 2018; Aschemann-Witzel *et al.* 2021). Furthermore, 40% of consumers are attempting to limit their intake of animal proteins, and 10% have totally abandoned red meat, according to a global poll conducted in 2019.^[20] Addressing the climate effect of agriculture is becoming more important as the global food system and the agricultural sector must undergo significant change in order to meet the objectives of the Paris Agreement (Rockström *et al.* 2020; Willett *et al.* 2019; Springmann *et al.* 2018). In addition to being accessible, culturally acceptable, economically equitable, and reasonably priced, sustainable diets are also nutritionally sufficient and mindful of ecosystems and biodiversity. When assessing dietary sustainability, land degradation, greenhouse gas emissions, and water consumption for food production are essential proxy measures.^[24]

Health Benefits

According to Jovanovic *et al.*, a 1-unit increase in daily servings of a healthy plant-based diet that excludes added sugars, refined grains, and oils was linked to a 4% lower risk prevalence of elevated waist circumference and Metabolic syndrome (MetS) risk. PBD has been found to have many beneficial and protective effects on metabolic health, significantly lowering the associated risks. However, not all evidence supports these findings.^[25] Although the study only evaluated the lack of animal products (meat, dairy, and eggs), not the diet's quality, a vegan diet by itself did not lower the incidence of MetS. According to earlier studies, advantages

connected to MetS may be linked to following a nutritious plant-based diet that includes more fiber, plant bioactive components, and less ultra-processed foods (Noce *et al.* 2021; McGrath and Fernandez 2022). Many health problems, including as diabetes mellitus, high blood pressure, hyperlipidemia, obesity, and coronary artery disease, have been associated with a diet heavy in sugar, salt, cholesterol, and fat, which is usually referred to as a Western diet. Atherosclerosis, atherothrombotic coronary artery disease, and atherogenesis can all be facilitated by these circumstances.^[28] On the other hand, a diet high in nuts and extra-virgin oil has been demonstrated to have positive benefits. In animal models, a diet rich in unsaturated fats can result in decreased levels of triglycerides and plasma cholesterol, as well as decreased inflammation and atherosclerosis when compared to a Western diet (diminished adhesion, inflammation, and foamy monocyte production in Ldlr-/-mice).^[29] According to earlier studies on humans, a diet high in unsaturated fat and one that is extremely low in fat can significantly lower LDL cholesterol levels more than a diet heavy in saturated fat.^[30] The degree of cholesterol reduction is the primary reason why increasing polyunsaturated fatty acids (PUFAs) and monounsaturated fatty acids (MUFAs) reduces the incidence of cardiovascular disease. Reducing saturated fat has cardiovascular benefits via altering atherosclerosis through serum cholesterol, which modulates pathways affecting inflammation, homeostasis of the heart rhythm, generation of apolipoprotein-C III, and function of high-density lipoprotein (HDL) (Hooper *et al.* 2015; Maki, Dicklin, and Kirkpatrick 2021). It has been demonstrated that plant-based diets are cardioprotective and advantageous for a number of illnesses, including type 2 diabetes, obesity, and hypertension (Melina, Craig, and Levin 2016; Kahleova, Levin, and Barnard 2017; McMacken and Shah 2017; Yeh and Glick-Bauer 2016). Because these diets contain processes that lower cardiovascular risk factors including blood pressure, blood glucose, lipid profiles, and abdominal obesity, they may be helpful in the prevention and treatment of certain conditions (Melina, Craig, and Levin 2016; McMacken and Shah 2017; Yeh and Glick-Bauer 2016). The effect of a vegetarian diet on low density lipoprotein cholesterol (LDL-C) and high-density lipoprotein cholesterol (HDL-C), however, has produced contradictory findings. The plasma HDL-C levels of vegetarians and omnivores, for instance, have not been observed to vary in certain investigations. decreased levels of LDL-C and total cholesterol, which are linked to a decreased risk of cardiovascular disease, were identified in vegetarian populations in other research, although HDL-C was also lower.^[35] Plant-based diets have been demonstrated to have positive benefits on diabetes and obesity because they include foods high in fiber, antioxidants, magnesium, and phytochemicals, all of which have been shown to improve glycemic control and insulin sensitivity (McMacken and Shah 2017; Olfert and Wattick 2018;

Chen et al. 2018). Furthermore, one of the primary causes of type 2 diabetes is obesity. Plant-based diets may help prevent and cure this illness in part because they encourage weight reduction, lower food energy density, and increase satiety, all of which lower insulin resistance.^[34] As a result, vegetarian diets affect the interactions between food and microbiota, offering additional advantages. Vegan and vegetarian diets resulted in a significant shift in the gut microbiota, with a significant decrease in the vegan subjects of Enterobacteriaceae, a family of bacteria implicated in triggering low-grade inflammation, according to a study that included 144 vegetarians, 105 vegans, and an equal number of matched omnivores. In another study, six obese individuals with diabetes and/or hypertension who were on a vegan diet for a month experienced decreased body weight and improved blood glucose levels. They also showed a significant increase in Bacteroidetes, which are linked to low-calorie and vegetarian diets, and a decrease in Enterobacteriaceae and Firmicutes, which are linked to Western diets and low-grade inflammation. Consequently, a vegan or vegetarian diet's high fiber content may help.^[35] Clinical studies largely support the idea that a vegetarian diet may lower blood pressure. When compared to omnivorous diets, vegetarian diets may be linked to lower systolic and diastolic blood pressure, per the AHS-2 research. Compared to the omnivores in the sample, vegetarians—and vegans in particular—had lower systolic and diastolic blood pressure as well as a reduced prevalence of hypertension. Additionally, the individuals' LDL-C and total cholesterol levels were lower, and their risk of obesity and diabetes was decreased. More research is required to confirm therapeutic effects in other diseases like colon

cancer and ischemic heart disease, as well as to better understand the benefits of plant-based diets for chronic diseases and the differences in benefits by gender and population groups (Yeh and Glick-Bauer 2016; Fraser et al. 2015).

The World Health Organization (WHO) reports that during the 1970s, the number of obese people has nearly quadrupled, with over 1.9 billion individuals being overweight and 650 million obese. Furthermore, kids are impacted as well. According to the WHO, 39 million children under five will be overweight or obese in 2020.^[39] Despite the fact that obesity is thought to be avoidable, the number of people who are overweight or obese has not decreased as of yet.^[40] Enlarged fat cells are thought to be the cause of metabolic syndrome, diabetes mellitus, and insulin resistance. People with a BMI under 22 kg/m² are thought to have the lowest chance of developing diabetes. There is a linear link between BMI and the risk of diabetes. The relative risk is 40 times higher for those with a BMI of 35 kg/m² or above.^[41] Preventing obesity and overweight is the most effective way to lower the number of people who suffer from these disorders. Regrettably, the right recipe hasn't been discovered yet. Vegan and plant-based diets are a relatively recent development in the treatment and prevention of obesity and cardiovascular illnesses (Najjar and Feresin 2019; Huang et al. 2016; Orlich and Fraser 2014).

Table 1 displays the average protein, cholesterol, and calorie composition of a few items utilized in various diets.

Table 1: Egg: the data are presented per 100 g (usually one small egg is 50 g. The symbol “_” in the table means “absent in the specific diet”. The symbol “+” in the table means “present in the specific diet”. Data obtained from the USDA National Nutrient Database for Standard Reference.^[45]

Food	Average Kilocalories (kcal)Per100g	Average Cholesterol Content (mg/100g)	Average Protein Content (g/100g)	Omnivorous Diet	Plant Based Diet	Vegan Diet
Ground beef	260	87	25.54	+	_	_
Beef (roast)	219	82	27.45	+	_	_
Beef sausage	328	61	13.3	+	_	_
Chicken feet	215	84	19.4	+	_	_
Chicken (back)	298	87	25.73	+	_	_
Fish	188	90	21.74	+	_	_
Pork sausage	325	86	18.53	+	_	_
Pork hash	185	56	12.96	+	_	_
Eggs* (hard-boiled)	155	373	12.6	+	+	_
Hard cheese	157	69	13.83	+	+	_
Cheese dip	160	8	3.24	+	+	_
Feta cheese	265	89	14.21	+	+	_
Roquefort cheese	353	75	21.4	+	+	_
Brie cheese	334	100	20.75	+	+	_
Cow milk (whole)	67	15	3.3	+	+	_
Cow butter, light	499	106	3.3	+	+	_
Peanut butter	597	0	22.5	+	+	+

Almond butter	614	0	20.94	+	+	+
Corn oil	900	0	0	+	+	+
Coconut oil	883	0	0	+	+	+
Olive oil	884	0	0	+	+	+
Sesame oil	884	0	0	+	+	+
Sunflower oils	884	0	0	+	+	+
Soy milk (unsweetened)	38	0	3.53	±	±	+
Oat milk	50	0	1.25	±	±	+
Beyond meet R-beyond burger	230	0	17.7	±	+	+
Chicken grilled strips	141	0	23.53	±	+	+
Beyond meet R plant-based brat	280	0	18.67	±	+	+
Mushrooms (raw)	22	0	3.09	+	+	+
Potatoes, baked	93	0	1.95	+	+	+
Chickpeas (canned)	128	0	8	+	+	+
Green peas (frozen)	79	0	5.62	+	+	+
Arugula (raw)	25	0	2.58	+	+	+
Tomatoes (raw)	22	0	0.88	+	+	+
Red peppers (raw)	17	0	0.68	+	+	+
Spinach (raw)	23	0	2.86	+	+	+
Cauliflower (raw)	25	0	1.92	+	+	+
Cucumbers (raw)	10	0	0.59	+	+	+
Avocado (raw)	160	0	2	+	+	+
Melon (honeydew, raw)	36	0	0.54	+	+	+
Watermelon (raw)	30	0	0.61	+	+	+
Blueberries (raw)	57	0	0.74	+	+	+
Strawberries (raw)	32	0	0.67	+	+	+
Rose-apples (raw)	25	0	0.6	+	+	+

Nutritional Challenges

A significant obstacle for plant-based meat substitutes is to replicate the look, feel, taste, and mouthfeel of meat products. Customers who are omnivorous and flexitarian like plant-based substitutes that closely resemble meat, whereas vegetarians and vegans are more willing to accept substitutes that don't have the same sensory qualities (Reipurth et al. 2019; Michel, Hartmann, and Siegrist 2021). According to Michel et al., taste plays the most important role, as some consumers refuse to purchase protein alternatives because they "won't like the taste". Furthermore, consumers most frequently associate regular meat with taste in contrast to meat alternatives. This suggests that meat preference is mostly influenced by taste, which makes it difficult for the food business to match the flavour of meat substitutes with that of traditional meat. It's interesting to note that consumers find plant-based substitutes more convincing when they mimic processed meats like sausages, nuggets, and hamburgers than when they mimic raw meats like steak.^[47] Clark and Bodgan discovered that the group most inclined to buy protein substitutes cited two key reasons for not increasing their consumption: they were "too processed" and "high in sodium." "Too

many preservatives" was one of the primary disincentives for the group most inclined to buy such items (Clune, Crossin, and Verghese 2017; Soret et al. 2014). Similar sensory difficulties must be addressed by milk substitutes, particularly by frequent drinkers of cow's milk. Comparative sensory testing has consistently shown that cow's milk is superior than soy-based substitutes in tests including both adults and children (Bhat and Fayaz 2011; Palacios et al. 2010).

Since proteins are the building blocks for the creation of human tissues and act as regulators (hormones, enzymes, antibodies, etc.), they are necessary for our bodies to operate correctly and to preserve our health. Amino acids make up proteins: necessary amino acids, which the body cannot make on its own and must thus get from food, and non-essential amino acids, which the body can synthesis. Some plant proteins, like soy, have amino acid profiles and bioavailabilities that are comparable to those of eggs. Phytates, tannins, and saponins are examples of anti-nutrients that can interfere with the absorption of proteins. Vegetarians are known to consume less proteins than omnivores, particularly lysine and methionine amino acids (Tangyu et al. 2019; Romina Alina et al.

2019;García Maldonado, Gallego-Narbón, and Vaquero 2019). Additionally, as is widely known, there are mechanical and thermal pre-processing methods (such as roasting, dehulling, blanching, soaking, frying, and sprouting) that may be used to improve mouth feel and colour, lessen off-flavour, and diminish anti-nutrients like protease inhibitors. Some anti-nutrients, nevertheless, are quite resilient. A fermentation procedure that generates phytases that hydrolyze phytates into myo-inositol and phosphate, for instance, may be more effective because phytates cannot be completely eliminated even by heating to 100 C. Plant-based products with highly accessible plant proteins, such as soy, are available these days. Other methods are also being researched and assessed, such as the use of microalgae as a source of plant protein and novel microbial fermentation processes to boost the protein content of dairy substitutes.^[52]

Because it is required for DNA synthesis and other processes, vitamin B12 is an important nutrient. In addition to causing permanent cognitive impairments including disorientation, poor memory, and in more severe cases, dementia, a cobalamin shortage can harm the neurological system. Megaloblastic anemia and gastrointestinal issues are other symptoms.^[55] These days, vitamin B12 is produced using regulated biotechnological procedures for use in medicine, supplements, and food fortification. Breakfast cereals, non-dairy milk, and yogurt substitutes are a few examples of fortified foods (Hever 2016;McEvoy, Temple, and Woodside 2012). Watanabe et al.'s study yielded B12-enriched lettuce leaves grown hydroponically, indicating that these leaves are a great source of vitamin B12. According to these findings, vegetarians may benefit particularly from B12-enriched foods. Additionally, research has shown that soy yogurt producers may produce up to 18 g/L of cyanocobalamin.^[57]

Since vitamin D receptors are present in many cell types in the body and are therefore involved in a wide range of functions, including cellular and immune roles, vitamin D is an essential nutrient for the body and for maintaining a healthy state. It is also required to prevent skeletal and muscular changes, such as osteoporosis and rickets, as well as other numerous diseases by influencing a large number of metabolic pathways beyond bone metabolism (Melina, Craig, and Levin 2016; Prietl et al. 2013). Vegetarians and vegans have been shown to have lower serum vitamin D levels than omnivores, particularly when the blood was drawn in late winter or early spring and in those who live in high latitudes where there is less chance for sun exposure. As a result, vegetarians must consume more vitamin D from foods like milk and eggs as well as fortified meals, ideally containing the highly accessible D3 form. Vegans are more susceptible to deficiencies because the only dependable sources for them are sunlight and certain fortified plant-based foods like breakfast cereals, plant-

based beverages, and mushrooms (Melina, Craig, and Levin 2016; Schouteten et al. 2016; Stagnari et al. 2017).

One of the most prevalent nutritional deficiencies in the world is iron deficiency, which has been linked, among other things, to vegetarian and vegan diets. On the other hand, vegetarians typically ingest just as much iron as omnivores, if not more. Because non-heme iron from plant sources is more readily attached to inhibitors that hinder its absorption (polyphenols, fiber, etc.), its bioavailability is lower than that of heme iron from animal sources (meat, poultry, and fish) (García Maldonado, Gallego-Narbón, and Vaquero 2019; Hever 2016; Gallego-Narbón, Zapatera, and Vaquero 2019). Vegetarian women have been found to have inadequate iron status, with menstruation and hormonal contraceptive use serving as the primary predictors. Children and anyone who experiences bleeding, such as those with ulcers, malabsorptive disorders, or severe menstrual blood losses, are also at risk for iron deficiency (Gallego-Narbón, Zapatera, and Vaquero 2019; Blanco-Rojo and Vaquero 2019). Numerous studies have demonstrated that food fortification is a viable tactic for lowering the incidence of anemia in underdeveloped nations. For effective absorption and bioavailability, food carriers must be developed with iron compounds' synergistic effects in mind. Put another way, in order to increase the efficacy of fortification, the possible impacts of iron enhancers and inhibitors must be considered. Currently, salt, sugar, cereal-based goods, milk, and other dairy products are common foods that are fortified with iron. To enhance the amount of bioavailable iron in plant foods, a variety of strategies are employed. Phytic acid reduction (e.g., adding phytases during baking), biofortification, ferritin content enrichment, microencapsulation of the iron fortifier prior to its addition to the food vehicle, and ascorbic acid addition are some of these methods (Blanco-Rojo and Vaquero 2019; Shubham et al. 2020).

Omega-3fatty acids are crucial as they are transformed into eicosapentaenoic(EPA) and docosahexaenoic (DHA) acids, which play a critical role in health maintenance as they perform various key actions at neurologic, cardiovascular, cognitive and immunological levels (García Maldonado, Gallego-Narbón, and Vaquero 2019; Salvador et al. 2019). Since oily fish is the primary dietary source of EPA and DHA, which is absent from vegetarian diets, and since ALA transforms to these two omega-3 FAs at a very slow pace, omega-6 fatty acids are abundant in vegetarian and vegan diets but omega-3 fatty acids are sparse (Melina, Craig, and Levin 2016; García Maldonado, Gallego-Narbón, and Vaquero 2019; Salvador et al. 2019). To achieve stated benefits including maintaining blood pressure and triglyceride levels, the European Food Safety Authority (EFSA) advises consuming 2–4 grams of EPA and DHA per day. Intakes of 250 mg per day are adequate to maintain normal cardiac function.^[65]

The most prevalent mineral in the human body is calcium. 99% of the calcium in the body is kept in the bones and teeth, with only 1% moving through the blood and tissues. Approximately nine million people worldwide get osteoporosis-related fractures each year.^[53] It has been demonstrated that vegetarians consume less calcium than omnivores. Vegetarians can consume up to 25% less calcium than omnivores, and the majority of their calcium comes from fortified plant-based beverages. In order to prevent calcium shortage and maintain bone health, it is advised that plant-based consumers pick foods that are high in calcium but, more significantly, have a high bioavailability. They should also choose fortified food items (Melina, Craig, and Levin 2016; García Maldonado, Gallego-Narbón, and Vaquero 2019; Hever 2016).

Sustainability and Environmental Impact

Since attaining the objectives of the Paris Agreement would require a significant overhaul of the global food system and the agricultural sector, there is a renewed focus on addressing the climate effect of agriculture (Willett *et al.* 2019; Rockström *et al.* 2020). When ruminant emissions, feed production, and land use change are taken into consideration, previous studies have shown that livestock alone contributes around 14.5% of global GHG emissions.^[66] A plant-based diet may lead to more efficient use of financial resources, which might lessen its effects on the environment, according to evidence (Weinrich 2019; Candy *et al.* 2019). An increasing number of studies have revealed that the natural environment is unnecessarily burdened by excessive meat production and consumption as well as industrial farm conditions (Mullee *et al.* 2017; Vanhonacker *et al.* 2013). Comparing plant-based goods to Mediterranean diets (which include meat and fish), it was discovered that the former produced better outcomes across the board for environmental impact indicators. According to criteria pertaining to environmental effect, typical meals in Denmark were compared with vegetarian and vegan diets using so-called life-cycle assessments (LCA). Compared to the mixed diet, the two plant-based diets—vegetarian and vegan—produced noticeably superior outcomes. But there weren't any significant variations between the two plant-based diets (Castañe and Antón 2017; Goldstein *et al.* 2016). An increasing amount of study has examined how adopting diets that are meant to reduce the environmental effect of food production—often referred to as sustainable diets—affects the environment in high-income countries (HICs). In addition to adhering to national dietary standards, a number of sustainable dietary patterns have been proposed, such as vegetarian and Mediterranean diets. Because plant-based meals may partially replace animal products, such diets may have positive effects on both health and the environment. As a result, adopting sustainable diets may be crucial to reaching several Sustainable Development Goals (SDGs) (Tilman and Clark 2014; Macdiarmid *et al.* 2012; Pradhan, Reusser, and Kropp 2013). We assess the consequences of

different types of sustainable eating patterns on the environment and human health, and we thoroughly examine the data supporting the benefits of adopting sustainable diets on GHG emissions, agricultural land requirements, and water consumption. Because so many researches have been published since the last two reviews, our study tries to significantly expand on them. We also use grey literature and other indicators of water consumption and health implications (Hallström, Carlsson-Kanyama, and Börjesson 2015; Joyce *et al.* 2014).

CONCLUSION

There are a number of factors that should be taken into account when planning new sources and ingredients, and in this context, the production of meat substitutes, like cultured meat, has a lot of potential but still needs to be optimized. Consumers across the globe are decreasing their consumption of food originating from animals for a variety of reasons, which includes a growing market for plant-based products. There is also a lot of promise in other biotechnology processes including fermentation, microalgae cultivation, and the inclusion of microbes like those that create vitamin B12. It should be noted that participants with unique needs may benefit from these plant-based items, such as those who have allergies to substances found in animal-based foods or chronic illnesses that are known to improve with a diet higher in vegetables and less in animal products. Lastly, we must remember that humans, animals, and plants are all a part of the earth, and that a healthy planet should coexist with a healthy person. The study's review leads to the conclusion that shifting the focus from producing cattle and animal feed to producing more plant-based food for human consumption has a substantial potential to lower greenhouse gas emissions from agriculture. The study's primary goals were to determine the key components of a plant-based diet and, using data from Hungarian and foreign literature, to characterize the perceived and objective advantages of and obstacles to adopting and maintaining a vegetarian diet. Globally, the prevalence of chronic illnesses has dramatically increased in recent decades. Over the past few decades, consumers' health has declined, which can be linked to an unhealthy lifestyle that includes consuming excessive amounts of luxuries and imbalanced meals and beverages. The quality of diet has a significant impact on the development of illnesses. The food business is thus confronted with new difficulties, and it is now vital to provide foods that can halt the growth of the chronic illnesses that plague humanity due to their beneficial effects on health. Eating a healthy diet may be seen as a preventative measure to fight health issues as well as a means to "heal" illnesses and attain well-being.

The plant-based (vegetarian) diet, which cannot be considered standard, is an attempt to alter dietary patterns by substituting raw, unprocessed, or minimally processed foods of plant origin for highly processed and animal-based meals. Health issues, animal rights, or

ethical, political, spiritual, or economic considerations can all be factors in a person's decision to switch to a vegetarian diet. From a nutritional and medicinal perspective, research on plant-based diets is becoming more and more significant.^[78] It has been shown that the main motivations for adopting and maintaining a vegetarian diet are the health advantages of a plant-based diet (lower rates of body fat and obesity, higher presence of vital nutritional elements, and lowered risk factors leading to illnesses). In order to inform policy decisions for a sustainable future, it is imperative that research and development expenditures be sustained in areas such as consumer behaviour, sustainable agriculture, and the nutritional benefits of diets rich in plant foods and low in animal foods. The importance of this evidence and its consequences for nutrition science and public health must be understood by the general public as well as by scholars. There are still fascinating topics to research and uncover in this field of study as our knowledge of the fundamental mechanics of a PBD grows.

Conflict of Interest

The author declares that there is no conflict of interest.

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