

Diets of Vegetarians and Meat-Eaters Affect the Health Problems They Suffer

Jiahui Hong *

Guangdong Country Garden School, Foshan, 528000, China

* Corresponding author: sacosta79881@student.napavalley.edu

Abstract. As society evolves, dietary choices have expanded significantly, offering a wealth of options beyond traditional limitations. One noticeable trend is the rising number of non-religious vegans, who are embracing plant-based diets due to their myriad health benefits when balanced correctly, mitigating some issues seen with conventional vegetarian diets. Conversely, the surge in meat production has led to an increasing number of carnivores, with some individuals even adopting exclusively meat-based diets. This article aims to explore the dietary disparities between vegetarians and meat eaters and the potential health concerns associated with each. Dietary habits play a pivotal role in shaping health. Vegetarians often grapple with protein and iron deficiencies due to their exclusion of meat, leading to potential clotting disorders and symptoms such as mental depression and fatigue. In contrast, meat eaters generally have an ample protein supply, but excessive consumption of red and processed meats has been linked to diseases like cancer. Furthermore, vegetarians may sometimes overlook essential nutrients found in meat, such as heme iron. This nutrient can be absorbed more easily than non-heme iron in plant, which may cause deficiency anemia. On the flip side, meat-heavy diets may lack essential aspects. A diet devoid of fruits and vegetables typically results in insufficient dietary fiber intake, giving rise to various health problems. Both dietary patterns have their merits and demerits, individuals must adjust their diets to address these shortcomings.

Keywords: Vegetarian, meat-eaters, red meat, dietary fiber.

1. Introduction

In Western society, vegetarian and vegan are becoming more and more popular [1]. Vegetarianism, the practice of abstaining from meat consumption, has roots dating back to ancient Greece. Many individuals adopt vegetarianism based on religious beliefs, reverence for animals and religious principles. Others turn to vegetarianism due to limited access to meat. Within the vegetarian spectrum, there are lacto-vegetarians, lacto-ovo vegetarians, and vegans, each with distinct dietary preferences. While most vegetarians include specific animal products in their diet, a small percentage are vegans, who avoid all animal products. An increasing number of people are embracing vegetarian diets, supported by studies highlighting their nutritional adequacy and the potential anti-inflammatory and antioxidant benefits, emphasizing the advantages of a plant-based diet.

In tandem with societal changes, meat consumption patterns have evolved. Despite the growth in the number of vegetarians, there has been a faster increase in meat eaters, especially among those who primarily consume meat, commonly referred to as carnivores. Carnivores predominantly favor red and processed meats, often with limited intake of vegetables and fruits. This group typically exhibits lower sympathy for animals. For many, indulging in various meats offers spiritual and psychological satisfaction and serves as a primary source of nutrition. Research indicates a significant link between dietary choices and factors such as animal empathy, moral disengagement, and meat consumption behaviors, with those adhering to carnism generally consuming more meat [2].

2. Dietary Patterns Comparison

Vegetarians adopt a diet that markedly differs from that of non-vegetarians, primarily by avoiding meat and meat products. Within the vegetarian spectrum, there are lacto-vegetarians, lacto-ovo vegetarians, and vegans, each with distinct dietary preferences. Lacto-vegetarians incorporate grains,

vegetables, fruits, legumes, seeds, nuts, dairy products, and eggs into their diet, excluding eggs, meat, fish, or poultry. Vegans exclude eggs, dairy products, and all other animal-derived items. For children, vegan diets generally lead to higher fiber intake and lower total fat, saturated fat, and cholesterol consumption compared to omnivorous diets. However, studies indicate potential challenges with lower calcium levels in vegan children, while vegetarian children may have slightly higher protein requirements.

In contrast, carnivores predominantly consume red meat and processed meat, with red meat referring to beef, pork, and lamb in the main course, and processed meat undergoing transformation through salting, curing, fermentation, smoking, or other processes to enhance flavor or improve preservation. Meat offered large amount of dietary protein, essential for growth, maintenance, repair, and energy provision. Consumption patterns for various meats differ considerably, with developed countries experiencing a general decline in red meat consumption, driven in part by reduced beef consumption since the late 1990s. Conversely, pork consumption, particularly in the EU, has been steadily increasing [3].

Dietary protein is crucial for the body's growth, maintenance, repair, and energy needs. A vital risk factor for type 2 diabetes and cardiovascular disease is metabolic syndrome, with dairy consumption exhibiting a protective effect against its development. Calcium, protein, and fat have physiological effects on key components of metabolic syndrome. Calcium supplements enhance serum lipoprotein profiles, while protein increases short-term and long-term satiety, making them indispensable for growth. Additionally, dietary fiber's role in regulating intestinal flora contributes to improving metabolic syndrome. Conversely, red meat consumption will increase the risk of inflammation and the development of metabolic syndrome for reasons that are not yet fully understood.

Considering their distinct dietary choices, vegetarians often contend with protein and iron deficiencies due to their meat-free diets, which can result in clotting disorders and symptoms such as mental depression and energy deficiency. In contrast, carnivores, who favor meat while consuming fewer fruits and vegetables, face the potential risk of diseases like cancer due to excessive intake of red and processed meats. Additionally, a lack of dietary fiber in carnivorous diets can lead to digestive issues, primarily affecting the gastrointestinal tract, potentially inducing intestinal flora imbalances and constipation, with potential implications for tumor development. Vegetarians, despite obtaining iron from plant-based sources, may still need to monitor their nutrient intake closely as they cannot derive these nutrients directly from red meat.

3. Health Problem

3.1. Vegetarian - Protein Imbalance& Lack of Iron

Protein plays a vital role in the human body by providing energy, supporting various bodily functions, and contributing to overall health. Maintaining a balanced protein intake is crucial, as both excessive and insufficient protein levels can have significant impacts on human health [4].

Vegetarians, who abstain from protein-rich animal sources such as beef and pork, are often at risk of protein deficiency, leading to an imbalance in protein intake. Protein is a fundamental building block of the human body, necessary for the functioning of all bodily tissues. Protein deficiency can result in severe health consequences, including blood clotting disorders. Individuals with protein deficiency are at a higher risk of abnormal clotting, while those with moderate deficiencies may face conditions like deep vein thrombosis in the lower extremities. Furthermore, research indicates that protein deficiency can lead to a range of health issues, including muscle wasting, mental health disturbances, and weakened immune system [5].

Protein has a unique satiating effect compared to carbohydrates and fats, contributing to a sense of fullness over time. Over the long term, high-protein diets sustain higher post-absorption satiety and heat production, regardless of the protein source. Vegetarians, who tend to consume lower protein relative to carbohydrates, may face challenges related to weight management.

Additionally, Vegetarians are more like to suffer from iron deficiency anemia because of their lacking sufficient iron diets. Iron deficiency can affect brain cells, myelin, and neurotransmitters, potentially causing harm to vegetarians, responsible for carrying oxygen. Consequently, individuals with iron deficiency anemia may experience fatigue and shortness of breath. Iron deficiency anemia has become an increasing concern because of advances in iron metabolism research, which is prevalent globally and primarily diagnosed based on reduced serum ferritin and transferrin saturation levels. This condition not only leads to anemia but also disrupts the immune system, impairs physical performance, causes bone problems, and reduces oxygen supply to muscles, ultimately impacting metabolic capacity [6, 7].

3.2. Carnism - Excessive Consumption of Red Meat& Dietary Fiber Deficiency

Meat is indeed an essential component of the human diet, providing valuable vitamins, minerals, such as iron and vitamin B12, and high-quality protein. However, Excessive consumption of meat can also cause harm to the body, such as red meat and processed meat, which are the most common meats, also cause many diseases. Carnism, characterized by a meat-heavy diet, should be approached with moderation to avoid unnecessary harm to the body [8].

Red meat, although nutritious, often contains high levels of saturated fat and can produce carcinogenic chemicals during cooking and processing. Studies have suggested a potential link between High red meat consumption is associated with increased mortality, which further proves that red meat can affect human health problems, especially excessive intake can cause greater harm to human health [9]. Processed meats may increase the risk of colon cancer, and current recommendations advise reducing or eliminating their consumption [10]. Furthermore, the lack of dietary fiber in a meat-centric diet can contribute to various health issues, including diseases of the intestine and heart disease [11]. Ideally, increasing fiber intake through whole grains, fruits, and vegetables is essential for promoting digestive health, which is often lacking in a diet focused on carnism.

Many common diseases in Western societies have been linked to gut health, stool volume, and consistency, which are directly influenced by dietary fiber. Colorectal tumors, for instance, can be partially attributed to changes in gastrointestinal behavior caused by insufficient fiber intake. Factors such as stress levels in the colon, fecal bacterium types, serum cholesterol levels, and bile salt metabolism have all been associated with dietary fiber intake. The lack of fiber can lead to gastrointestinal issues like constipation, increase the retention time of harmful substances, and elevate the risk of cancer, metabolic diseases [12].

In conclusion, while meat provides essential nutrients, excessive consumption of it still has the risk of people's physical health.

4. The Health Effects of Dietary Fiber

Dietary fiber, predominantly found in grains and vegetables, constitutes a significant component of diet, conferring substantial benefits to overall health [13]. Its pivotal functions encompass the regulation of metabolism, and the modulation of gut microbiota (GM) [14]. Studies have consistently demonstrated an inverse relationship between fiber intake and the risk of coronary heart disease and certain cancers, indicating that increasing dietary fiber can lower the incidence of these diseases, this may be attributed to various mechanisms, including enhanced bile acid secretion and production of SCFA (Fig. 1) [15]. Moreover, the digestive and viscosity properties of dietary fiber play a role in influencing the risk of diabetes and obesity, likely by reducing nutrient absorption and metabolizable energy [15].

Dietary fiber significantly promotes digestive system function by stimulating increased digestive fluid secretion in the stomach and accelerating intestinal peristalsis. It facilitates the breakdown of macromolecular structures, aiding digestion. Furthermore, it contributes to softer and more voluminous stool formation, thereby preventing constipation and related symptoms. This reduction

in stool retention time in the body minimizes harmful substance absorption and mucosal irritation in the large intestine. Dietary fiber also aids in cholesterol absorption and breakdown in the intestine, leading to improved serum lipoprotein values, blood pressure, blood sugar control, and weight management, as well as enhanced regularity [13].

GM has been shown to be associated with many health issues, especially metabolic-related issues. Changes in the composition and abundance of the GM are observed in many patients. Additionally, dietary fiber has a positive impact on GM, potentially slowing down the aging process. It hinders the production and activation of carcinogens, reducing the risk of colon cancer. Dietary fiber contains various substances that shield cell function and prevent cellular damage. Through fermentation, dietary fiber yields SCFA, regulating gut pH levels and creating a conducive environment for beneficial bacteria growth. A healthy GM supports normal gastrointestinal function, bolsters immunity, and regulates metabolism [14].

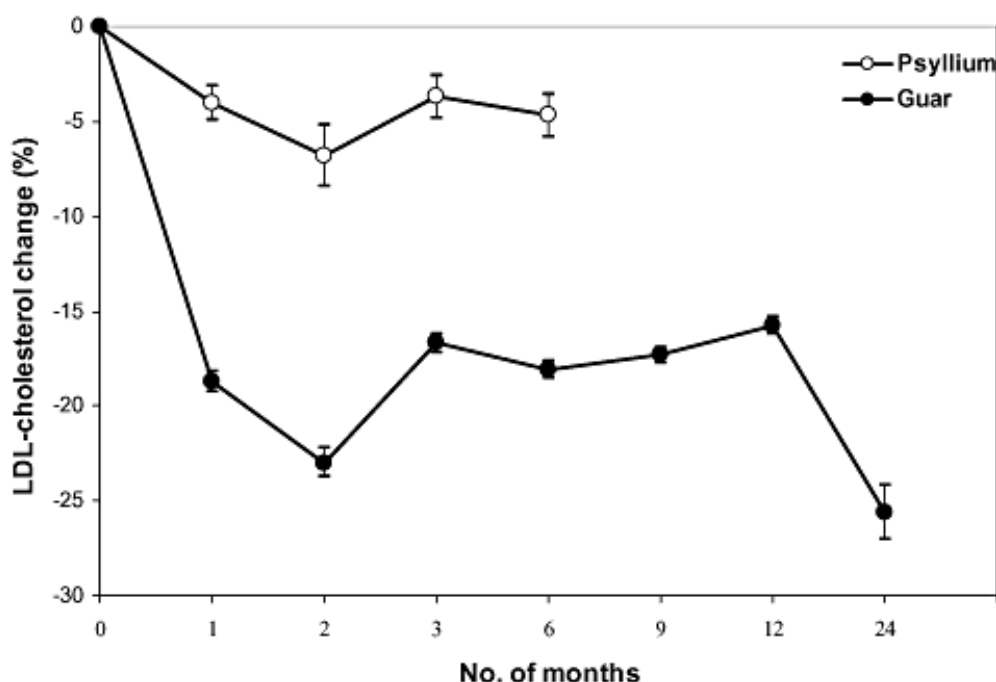


Figure 1. Long-term effects of dietary fibers on LDL-C [14].

5. Conclusion

In general, both vegetarian and carnism diets come with their own challenges in achieving absolute nutritional balance. Vegetarians avoid meat entirely, while carnism involves minimal to no consumption of fruits and vegetables, resulting in varying degrees of nutritional deficiencies. Over the long term, vegetarian diets tend to lead to protein deficits, which can manifest as issues with clotting function and muscle atrophy. Carnism, on the other hand, can lead to various diseases due to excessive red meat intake and the challenge of obtaining essential nutrients like vitamin C due to the lack of fruits and vegetables. Excessive red meat consumption, particularly processed meats, poses more immediate and severe health risks. Processed meats caused an increased risk of cancer, including colorectal cancer. Additionally, other diseases such as Symptoms such as diabetes caused by problems in the regulation of the heart and kidney, and intestinal diseases caused by problems in the digestive system. are also more pronounced risks for those with a heavy reliance on red meat.

Vegetarians primarily rely on starchy foods and beans to maintain their protein intake since they do not consume meat. To compensate for the lack of easily absorbed iron from red meat, vegetarians need to incorporate iron-rich plant foods into their diet and consume foods rich in vitamins, and beta-carotene boost the absorption of iron.

Maintaining a balanced diet can also be a challenge for meat-eaters. However, meat-eaters have the advantage of obtaining essential vitamins and micronutrients from meat, particularly from animal liver, which is rich in various nutrients. This can simplify the task of maintaining a balanced diet as they can derive many of their nutritional requirements from a single source. However, it's still important for meat-eaters to pay attention to the overall composition of their diet, ensuring they include a variety of foods to meet their nutritional needs and maintain good health.

To ensure their overall health and proper bodily functions, vegetarians have to exercise dietary control and increase their consumption of whole grains compared to the general population. They typically include at least one daily meal featuring whole grains or legumes. Meat eaters can benefit from incorporating more vegetables into their diet or considering dietary fiber supplements to maintain balance and overall well-being.

References

- [1] M. B. Ruby. Vegetarianism. A blossoming field of study. *Appetite*, 2012, 58 (1): 141 - 150.
- [2] E. K. Sigurðardóttir. Moral disengagement in relation to animal empathy, meat consumption, and carnism: people behaving contrary to their moral values. Reykjavik University, 2021.
- [3] S. McNeill, M. E. Van Elswyk. Red meat in global nutrition. *Meat science*, 2012, 92 (3): 166 - 173.
- [4] IARC Working Group on the Evaluation of Carcinogenic Risks to Humans. Red meat and processed meat. 2018.
- [5] A. Khan, S. Khan, A. Jan. Health complication caused by protein deficiency. *J. Food Sci. Nutr*, 2017, 1: 645 - 647.
- [6] P. Bhadra, A. Deb. A review on nutritional anemia. *Indian J Nat Sci*, 2020, 10 (59): 18466 - 18474.
- [7] C. Camaschella. New insights into iron deficiency and iron deficiency anemia. *Blood reviews*, 2017, 31 (4): 225 - 233.
- [8] J. Libera, K. Iłowiecka, D. Stasiak. Consumption of processed red meat and its impact on human health: A review. *Int J Food Sci Tech*, 2021, 56 (12): 6115 - 6123.
- [9] N. F. Aykan. Red meat and colorectal cancer. *Oncology reviews*, 2015, 9 (1): 288.
- [10] A. M. de Carvalho, C. L. G. César, R. M. Fisberg, et al. Excessive meat consumption in Brazil: diet quality and environmental impacts. *Public Health Nutr*, 2013, 16 (10): 1893 - 1899.
- [11] S. C. Larsson, N. Orsini. Red meat and processed meat consumption and all-cause mortality: a meta-analysis. *Am J Epidemiol*, 2014, 179 (3): 282 - 289.
- [12] D. A. Timm, J. L. Slavin. Dietary fiber and the relationship to chronic diseases. *Am J Lifestyle Med*, 2008, 2 (3): 233 - 240.
- [13] Ötles S, Ozgoz S. Health effects of dietary fiber. *Acta Sci Polon-Techn*, 2014, 13 (2): 191 - 202.
- [14] Anderson J W, Baird P, Davis Jr R H, et al. Health benefits of dietary fiber. *Nutrition reviews*, 2009, 67 (4): 188 - 205.
- [15] Lattimer J M, Haub M D. Effects of dietary fiber and its components on metabolic health. *Nutrients*, 2010, 2 (12): 1266 - 1289.