



## The Effect of the Keto Diet on Health

**Sultan Salman Al-Mutairi<sup>1\*</sup>, Abdullah Ayed Almutairi<sup>2</sup>, Saad Mohammed Rabea Alqahtani<sup>3</sup>, Fahad Abdullah Hamad Al-Bahdal<sup>4</sup>, Fatemah Sami Ibrahim Khowisah<sup>5</sup> And Abdulrahman Hameed Saleh Alharbi<sup>6</sup>**

<sup>1</sup>Clinical nutritionist, Sa0555514836@gmail.com, King Khalid Hospital in Al Kharj

<sup>2</sup>Senior Clinical Nutrition Specialist, Abaialmutairi@moh.gov.sa, Deputyship assistance international cooperation

<sup>3</sup>nutrition specialist, salqahtani46@moh.gov.sa, Irada and Mental Health Hospital in Al-Kharj

<sup>4</sup>General Nutrition Specialist, falbhdal@moh.gov.sa, Irada and Mental Health Hospital in Al-Kharj

<sup>5</sup>General nutrition specialist, Fkhowisah@moh.gov.sa, Irada and Mental Health Hospital in Al Kharj

<sup>6</sup>Therapeutic nutrition (clinical), Abdulrahman.h.alsehli@gmail.com, Riyadh Al Khabra Hospital

**\*Corresponding Author:** Sultan Salman Al-Mutairi

\*Clinical nutritionist, Sa0555514836@gmail.com, King Khalid Hospital in Al Kharj

### Abstract:

The ketogenic diet, often referred to as the keto diet, has gained popularity in recent years for its potential benefits in weight loss, managing certain medical conditions, and improving overall health. This essay explores the scientific evidence surrounding the effects of the keto diet on health. Through a review of relevant studies, this essay examines the potential benefits and risks associated with the keto diet, including its impact on weight loss, metabolic health, cardiovascular health, and potential long-term effects. Ultimately, the goal of this essay is to provide a comprehensive overview of the keto diet and its implications for health.

**Keywords:** ketogenic diet, keto diet, health, weight loss, metabolic health, cardiovascular health

### Introduction:

The ketogenic diet is a high-fat, moderate-protein, and low-carbohydrate diet that has gained significant attention in recent years for its potential health benefits. The main premise of the keto diet is to induce a state of ketosis, where the body burns fats for energy instead of carbohydrates. This metabolic shift is believed to have various health benefits, including weight loss, improved metabolic health, and increased energy levels. However, there is ongoing debate about the long-term effects and potential risks associated with the keto diet. This essay aims to provide an in-depth analysis of the scientific evidence surrounding the effects of the keto diet on health, focusing on its impact on weight loss, metabolic health, cardiovascular health, and potential long-term effects.

### Method:

To assess the effect of the keto diet on health, a comprehensive review of relevant studies published in reputable journals was conducted. The search included keywords such as "ketogenic diet," "keto diet health," "weight loss," "metabolic health," and "cardiovascular health." Studies that investigated the effects of the keto diet on various health outcomes, including weight loss, metabolic health, cardiovascular health, and potential long-term effects, were selected for inclusion in this review. The findings of these studies were analyzed to provide a comprehensive overview of the current scientific evidence on the effects of the keto diet on health.

The ketogenic diet, commonly known as the keto diet, is a low-carbohydrate, high-fat diet that has gained popularity for weight loss and potential health benefits. Here are some effects of the keto diet on health:

**Weight Loss:** The primary reason people follow the keto diet is often for weight loss. By restricting carbohydrates and increasing fat intake, the body is forced to enter a state of ketosis, where it relies on stored fat for energy. This can lead to significant weight loss in the short term.

**Improved Insulin Sensitivity:** The keto diet can improve insulin sensitivity, which is beneficial for individuals with type 2 diabetes or prediabetes. By reducing carbohydrate intake, the diet helps regulate blood sugar levels and may reduce the need for diabetes medication in some cases.

**Reduced Triglyceride Levels:** Following a keto diet can lead to a decrease in triglyceride levels, which are a type of fat found in the blood. Elevated triglyceride levels are associated with an increased risk of heart disease. By reducing carbohydrate intake and increasing fat consumption, the keto diet may help lower triglyceride levels.

**Increased HDL Cholesterol:** The keto diet has been shown to increase high-density lipoprotein (HDL) cholesterol levels, often referred to as "good" cholesterol. Higher levels of HDL cholesterol are associated with a reduced risk of heart disease.

**Appetite Suppression:** The high-fat content of the keto diet, along with adequate protein intake, can help control appetite and reduce food cravings. This can lead to a natural reduction in calorie intake, aiding weight loss efforts.

**Potential Benefits for Epilepsy:** The ketogenic diet has been used as a therapeutic approach for managing drug-resistant epilepsy, particularly in children. Research suggests that the diet's ability to elevate ketone levels in the blood may help reduce seizures in some individuals.

It's important to note that while the keto diet may have certain health benefits, it is not suitable for everyone and may have potential drawbacks. Some considerations include:

**Nutritional Deficiencies:** The restrictive nature of the keto diet may result in inadequate intake of certain nutrients, such as fiber, vitamins, and minerals. Careful meal planning and supplementation may be required to prevent deficiencies.

**Keto Flu:** When transitioning to a keto diet, some individuals may experience flu-like symptoms, known as the "keto flu." These symptoms can include fatigue, headache, irritability, and nausea. They typically resolve within a few days to weeks as the body adapts to using ketones for energy.

**Sustainability and Practicality:** The keto diet can be challenging to sustain in the long term due to its restrictive nature, which eliminates many carbohydrate-rich foods. Compliance and adherence may be difficult for some individuals.

**Potential Cardiovascular Risk:** While the keto diet may improve certain lipid profiles, it can also lead to an increase in low-density lipoprotein (LDL) cholesterol levels, which is associated with an increased risk of heart disease. The long-term impact on cardiovascular health requires further research and evaluation.

**Individual Variations:** The effects of the keto diet can vary among individuals, and some people may not experience significant benefits. It's essential to consider individual health conditions, goals, and preferences when deciding on a dietary approach.

Before starting any significant dietary changes, it is recommended to consult with a healthcare professional or a registered dietitian who can provide personalized guidance based on individual health status and goals.

### **Results:**

The results of the review indicate that the keto diet may have several potential benefits for health

-**Weight Loss:** Several studies have shown that the keto diet can lead to significant weight loss, particularly in individuals with obesity or overweight. The high-fat, low-carb nature of the diet is believed to promote fat burning and reduce hunger, leading to a decrease in calorie intake and subsequent weight loss.

-**Metabolic Health:** The keto diet has been shown to improve various markers of metabolic health, including blood glucose levels, insulin sensitivity, and lipid profiles. By reducing carbohydrate intake and promoting fat burning, the keto diet may help regulate blood sugar levels and improve overall metabolic function.

-**Cardiovascular Health:** Some studies suggest that the keto diet may have benefits for cardiovascular health, such as lowering triglyceride levels and increasing HDL (good) cholesterol. However, there is ongoing debate about the long-term effects of the keto diet on cardiovascular health, particularly in terms of its impact on LDL (bad) cholesterol and overall heart health.

### **Discussion:**

While the keto diet may offer several potential benefits for health, it is important to consider the potential risks and drawbacks associated with this eating pattern.

-**Nutritional Deficiencies:** The keto diet restricts the intake of certain food groups, such as fruits, grains, and legumes, which can lead to deficiencies in essential nutrients such as fiber, vitamins, and minerals. It is important for individuals following the keto diet to ensure they are meeting their nutritional needs through supplementation or careful food choices.

-**Long-Term Effects:** There is limited research on the long-term effects of the keto diet on health, particularly in terms of its impact on overall mortality, chronic disease risk, and quality of life. Further studies are needed to assess the safety and sustainability of the keto diet over extended periods of time.

-**Individual Variability:** The response to the keto diet may vary among individuals, with some experiencing rapid weight loss and improved health outcomes, while others may see the same benefits. It is important for individuals to work with a healthcare or registered dietitian to personalize their dietary approach and monitor their health parameters following the keto.

### **Conclusion:**

In conclusion, the keto diet may offer several potential benefits for health, including weight loss, improved metabolic health, and cardiovascular health. However, it is important for individuals to consider the risks and drawbacks associated with this dietary approach, such as nutritional deficiencies, long-term effects, and individual variability. Further research is needed to better understand the effects of the keto diet on health and to develop evidence-based guidelines for its use in clinical practice. Overall, the keto diet may be a valuable tool for some individuals seeking to improve their health, but careful consideration and monitoring are essential to ensure its safety and effectiveness.

### **References:**

1. Bueno NB, de Melo IS, de Oliveira SL, da Rocha Ataide T. Very-low-carbohydrate ketogenic diet v. low-fat diet for long-term weight loss: a meta-analysis of randomised controlled trials. *Br J Nutr.* 2013 Oct;110(7):1178-1187.

2. Paoli A, Rubini A, Volek JS, Grimaldi KA. Beyond weight loss: a review of the therapeutic uses of very-low-carbohydrate (ketogenic) diets. *Eur J Clin Nutr.* 2013 Aug;67(8):789-796.
3. Volek JS, Sharman MJ, Gómez AL, et al. Comparison of energy-restricted very low-carbohydrate and low-fat diets on weight loss and body composition in overweight men and women. *Nutr Metab (Lond).* 2004 Nov 8;1(1):13.
4. Westman EC, Yancy WS Jr, Mavropoulos JC, Marquart M, McDuffie JR. The effect of a low-carbohydrate, ketogenic diet versus a low-glycemic index diet on glycemic control in type 2 diabetes mellitus. *Nutr Metab (Lond).* 2008 Dec 19;5(1):36.
5. Feinman RD, Pogozelski WK, Astrup A, et al. Dietary carbohydrate restriction as the first approach in diabetes management: Critical review and evidence base. *Nutrition.* 2015 Jan;31(1):1-13.
6. Freeman JM, Kelly MT, Freeman JB. *The ketogenic diet: a treatment for epilepsy.* 4th ed. New York: Demos Health; 2010.
7. Kossoff EH, McGrogan JR. Worldwide use of the ketogenic diet. *Epilepsia.* 2005 Feb;46(2):280-289.
8. Accurso A, Bernstein RK, Dahlqvist A, et al. Dietary carbohydrate restriction in type 2 diabetes mellitus and metabolic syndrome: time for a critical appraisal. *Nutr Metab (Lond).* 2008 Dec 12;5(1):9.
9. Yancy WS Jr, Olsen MK, Guyton JR, Bakst RP, Westman EC. A low-carbohydrate, ketogenic diet versus a low-fat diet to treat obesity and hyperlipidemia: a randomized, controlled trial. *Ann Intern Med.* 2004 May 18;140(10):769-777.
10. Forsythe CE, Phinney SD, Fernandez ML, Quann EE, Wood RJ, Bibus DM, Kraemer WJ, Feinman RD, Volek JS. Comparison of low fat and low carbohydrate diets on circulating fatty acid composition and markers of inflammation. *Lipids.* 2008 Jan;43(1):65-77.