The Mediterranean diet and its positive lifestyle effects on people with asthma: A quick literature review.

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Abstract

Asthma is a chronic inflammatory disease with a rising prevalence worldwide. It is characterized by symptoms such as wheezing, coughing, and chest tightness. Environmental factors, such as an urbanization, air pollution, and lifestyle are believed to contribute to the increasing prevalence of asthma. The Mediterranean Diet profile focuses on whole grains, good fats (fish, olive oil, nuts etc.), vegetables, fruits, fish, and very low consumption of any non-fish meat. Along with food, The Mediterranean Diet emphasizes the need to spend time eating with family and physical activity. So, it represents not only a dietary pattern but also a lifestyle. It is scientifically accepted that the Mediterranean diet is protective against chronic and inflammatory diseases. The Mediterranean diet is a plant-based diet with high antioxidant content. The primary source of fat is olive oil, and the diet is low in saturated fat. Additionally, the Mediterranean Diet is also recommended for asthma patients due to its potential positive effects on weight control. This literature review describes the positive effect of the Mediterranean Diet on improving asthma symptoms while highlighting various healthy lifestyle benefits for people with asthma.

Keywords: Asthma, Mediterranean diet, Nutrition and dietetics, Lifestyle.

Introduction

Asthma is a chronic disease characterized by symptoms such as wheezing, coughing, chest tightness, and shortness of breath due to the blockage of airflow in the lower respiratory tract caused by infection [1]. This disease, which has increased with the age in the past, is nowadays frequently seen from very early ages and even from infancy. In addition, the frequency of this disease varies according to different populations. It is suggested that environmental factors, genotypic structure of individuals have special effects or additive effects in the disease which is also associated with the immune system not working effectively [2].

According to the World Health Organization (WHO), an estimated 262 million people were affected by asthma in 2019, and 455,000 deaths were reported due to asthma [3]. In Turkey, the prevalence of asthma among adults ranges from 2% to 17% [4]. Environmental factors such as air pollution and smoking, mainly due to increased industrialization, have been reported to contribute to the rising prevalence of asthma [5]. Poor nutrition is associated with the development of many chronic diseases, and dietary interventions are important in managing these condition. It is known that diet factors can directly affect the pathogenesis of asthma, and individuals with asthma are advised to consume a diet rich in fruits and vegetables, such as Mediterranean diet (MD) [6].

The concept of the MD emerged following a study in 1960 known as the Seven Countries Study, which showed that people living in countries close to the Mediterranean had a lower incidence of cardiovascular disease [7]. Initially perceived as only a healthy dietary pattern, MD has expanded in the last 50 years to become a sustainable dietary model encompassing socio-cultural, economic, and environmental benefits. A lifestyle model has been established when referring to MD [8]. Although variations of MD exist in over 16 Mediterranean countries, a known MD model has been characterized [9]. MD is a plant-based diet rich in grains, legumes, nuts, fruits, and vegetables, with limited consumption of red meat. Its noteworthy features include no restrictive diet that excludes specific foods, the consumption of seasonal local produce, and biodiversity [10].

The continuous rise in asthma prevalence is seen as an increasingly pressing public health issue. When considered from a dietary perspective, the increase in asthma prevalence has been related to the Western diet. With a Western diet, antioxidant intake decreases, the ratio of n6:n3 polyunsaturated fatty acids (PUFA) increases, and vitamin D deficiency is observed [11]. Studies have reported that consuming high

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amounts of raw vegetables and fruits facilitates asthma control and reduces exacerbations [12]. Increased consumption of dairy products has been associated with the development of asthma. Although the mechanism behind this relationship is unclear, it is thought to be related to milk proteins and fats [1]. It is known that excessive intake of saturated fatty acids, which are generally found in animal products and processed foods, increases oxidative stress and inflammation. In individuals with asthma, high consumption of saturated fats has been reported to increase airway inflammation and reduce the effectiveness of bronchodilator medications. A study has shown that high-fat meals can increase airway inflammation and decrease lung function [13]. Another study found that reducing saturated fat intake through diet decreased respiratory tract infections in male asthmatic patients [14]. Unhealthy lifestyle habits such as prolonged television/video game watching, physical inactivity, and consumption of salty snacks have also been strongly linked to increased asthma symptoms in children [15].

A study conducted on 44 asthmatic children aged 5-15 showed that MD can modulate the production of specific anti-inflammatory mediators (IL-4, IL-33, and IL-17) [16]. The Mediterranean Diet Pyramid provides guidance on the types and amounts of foods that should be consumed daily and weekly. Every main meal should include fruits, vegetables, and whole grains (usually whole grains). To obtain the necessary vitamins and minerals, at least one serving of fruit should be consumed raw, and a variety of fruits and vegetables should be consumed due to their different antioxidant contents [17]. Salt added to meals should be reduced, and spices, onions, and garlic should be used as their health benefits and flavor enhancers. Olive oil is the primary source of fat in the diet, while saturated and trans fat consumption is kept to a minimum. Moderate amounts of dairy products and white meat are consumed [18]. Physical activity and water consumption are emphasized, and foods with high sugar and unhealthy fat content are recommended to be consumed rarely. In addition, the diet supports the consumption of natural foods that are high in micronutrients and antioxidants instead of processed foods [9].

Obesity is a chronic inflammatory condition that can contribute to the development of allergic conditions. Although its mechanism is not fully understood, the evidence suggest that there a link between obesity and asthma. Various studies have suggested that inflammatory substances produced from adipose tissue affect the lungs and influence asthma. What is known is that individuals with obesity generally use more medication, experience worse symptoms, and have less asthma control. In a study covering 85,911 nurses, it was found for the first time that the risk of developing asthma significantly increased when BMI was equal to or greater than 30 kg/m2. Studies have shown that individuals with excess weight also report a higher risk of developing asthma regardless of gender and age. There are also studies reporting that increased waist circumference is associated with asthma, even if BMI is within the normal range. It is known that waist circumference is also a better measure in determining the risk of cardiovascular disease compared to BMI. Additionally, obesity is associated with increased asthma severity, poor asthma control, and decreased quality of life in affected individuals. Weight control is significant in asthma patients, and MD is thought to contribute to weight control as well [6, 12, 19].

Conclusion

Offering a high level of antioxidants, vitamins, and mineral content, MD is an important part of a more holistic approach in preventing and improving the severity of asthma and its symptoms. MD is known not only as a healthier diet but also as a lifestyle model encompassing social aspects and encouraging an active lifestyle. In order to prevent the increase in asthma prevalence, raising public awareness of adopting a healthier lifestyle is crucial. Informative programs, public service announcements, and advertisements should be developed to reflect the importance of adopting a healthy lifestyle and the value of healthy nutrition. In particular, healthy habits learned in childhood can easily be maintained into adulthood. For this purpose, informative education and training should be planned for parents and teachers.

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