

# The effect of the Mediterranean diet on obesity

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**Abstract.** Due to the rising prevalence of obesity, it has become a major public health problem. This paper explores the effects of the Mediterranean diet on obesity and the possible mechanisms through literature research. According to the findings, a strong adherence to the Mediterranean diet was linked to greater weight loss and a lower risk of obesity. Prevention of obesity is key, and strategies to change the eating habits of people are needed to slow the progression of obesity prevalence.

**Keywords:** obesity, the Mediterranean diet, weight loss.

## 1. Introduction

Modern society follows a highly Westernized diet, particularly among younger people [1]. Fresh produce, nuts, legumes, whole grains, and fish have been replaced by processed foods that are high in refined carbohydrates, sugar, and beverages with added sugar, as well as animal or partially hydrogenated fats [2]. The main issue is that the rise in obesity over the past few decades was mostly caused by the broad adoption of sedentary lifestyles and westernized food patterns [1]. Major factors in the recent rise in the obesity pandemic include these dietary changes and a more sedentary lifestyle [2]. Obesity is caused by an excess of body adiposity and an imbalance between calories consumed and calories expended [1]. It is a chronic illness and a significant public health issue [3]. Between 1975 and 2016, the prevalence of obesity roughly tripled globally [4]. According to recent data, one-fifth of adults worldwide would be obese by 2030, making obesity one of the most common medical conditions in the globe [5]. Pharmacotherapy, bariatric surgery, and lifestyle changes are the three main treatments for obesity now available and individualization of the first two therapies is required because they are both especially intrusive and very expensive [1]. The Mediterranean diet (MD) should be introduced as a feasible solution. A high intake of plant foods, a medium intake of poultry and seafood, as well as a reduction in sugars, red meat, and dairy foods are all characteristics of the MD [1]. While being reduced in consumption of saturated fats and abundant in monounsaturated fatty acids intake, it supplies a sizable amount of fibre, glutathione, and antioxidants [1].

## 2. Method

In this paper, by searching the keywords "Mediterranean diet", "obesity" and "weight loss" on PubMed, the relevant literature was reviewed to study the influence of Mediterranean adherence on weight loss, waist circumference reduction, and obesity, as well as the possible mechanism of the protective effect of the Mediterranean diet.

### 3. Result

Those with strong adherence to MD lost 0.16 kg on average and had a one-tenth decreased risk of gaining weight or being obese than study participants with low adherence, according to a report from the EPIC trial, which followed 373,803 men and women for a median of five years [2]. In addition, according to the findings of CARDIA study, participants who received an MD had smaller waist circumferences [2]. In a systematic analysis of five randomized clinical trials (RCTs), the effect of the MD on losing weight in obese adults was investigated by comparing MD programs with reduced fat diets, a limited carbohydrate diet, and the American Diabetes Association (ADA) diet [6]. According to this review, weight reduction from the MD was comparable to that from the other two therapies, although it was greater than weight loss from low-fat diets [6]. A 2011 meta-analysis of 16 RCTs by Esposito et al. revealed that greater adherence to the MD results in greater weight loss when compared to a control diet [6]. Moreover, there was no correlation between MD adherence and weight gain in any of the 16 RCTs [6]. According to epidemiological research, Body Mass Index (BMI) and weight growth show an inverse relationship with MD adherence [3]. Moreover, greater MD adherence is linked to a higher likelihood of maintaining weight loss [3]. According to a systematic meta-analysis of 16 RCTs examining MD therapies with periods ranging from 4 weeks to 24 months, consuming MD is associated with greater weight loss compared to control diets [3].

Nine items make up the Medi-Lite adherence score, which has a total score that ranges from 0 (poor adherence) to 18 (excellent adherence) [7]. Participants giving a score of 9 or less had an over three times increased risk of being categorized as clinically obese compared to patients indicating a higher score, whereas patients reporting a score of 12 or above had a decreased risk [7]. According to this meta-analysis, increased adherence to the MD was linked to a decreased risk of overweight\*  
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Table 2. Manuscript font sizes and formatting. This Microsoft Word template includes these formats as automated "styles," which can be selected in the Format menu -- Styles and Formatting. (9pt) and/or obesity among 6 prospective cohort studies [8]. In 4 cohort studies, the MD was substantially associated with decreased weight gain over a 5-year follow-up period [8]. Following an MD substantially lowered body weight and waist circumference, according to a recent meta-analysis [8]. A 6-month intervention with the MD could reduce body weight by 2.87 kg, according to another meta-analysis [8].

The MD is characterized by high consumption of polyphenols (phenolic chemicals), which are found in the extra-virgin olive oil (EVOO), nuts, red wine, beans, plant food that make up this dietary pattern [6]. A considerable decrease in the quantity of body fat was observed in several intervention clinical trials using meals high in polyphenols, such as apple juice [6]. 17 individuals with obesity and polyphenol supplement participated in a double-blinded, randomized, parallel clinical trial that revealed a substantial reduction in body weight, BMI, and waist and hip circumference after 12 weeks of treatment when contrasted to a control group [6]. Polyphenols may play a part in weight loss mechanisms like promoting satiety [6]. The encouraging preventive effects of polyphenols on weight gain and obesity need to be confirmed by additional randomized controlled trials [6].

In certain investigations, the level of protection of MD was comparatively strong. For instance, males with good MD adherence were up to 29% less likely to develop obesity, according to a cohort study [9]. Cross-sectional studies revealed an even larger protective impact, with up to 51% decreased likelihood of being overweight or obese [9]. Moreover, significant weight decreases of up to 14 kg were recorded in one intervention study [9]. Several biological mechanisms could be used to illustrate why key MD ingredients might prevent weight gain [9]. Several plant-based foods high in dietary fibre found in the MD have low-calorie densities and low glycemic loads, which may contribute to weight loss [3,9]. It has been established that this improves fullness through mechanisms such as prolonged chewing, increased stomach detention, and enhanced production of cholecystokinin [9]. Dietary fibre is present in this diet in a comparatively high amount [8]. Because high-fiber foods require more chewing, they may release more cholecystokinin and provide satiety and a feeling of fullness [8]. The majority of the MD is made up of low glycemic index (GI) carbs, namely whole grains [8]. Low GI diets reduce insulin secretion, an anabolic hormone that promotes weight gain [8]. Moreover, lower-GI foods may postpone

the feeling of hunger and hence cause people to consume less energy [8]. The MD helps prevent weight gain because it has a low energy density and low glycaemic load compared to many other dietary patterns. These traits, along with the high water content of diet, improve satiety and cause people to consume fewer calories [9]. The MD has a number of positive traits that also guard against fat [9]. First off, the type of fat is important since it contains more monounsaturated fats than cholesterol-raising saturated and trans fats [9]. Second, despite the notion that fat is the least satiating macronutrient, research results have not always been reliable. Thirdly, the regular addition of olive oil to salads, vegetable meals, and dishes with legumes improves the flavour of these items [9]. As a result, more meals that are high in dietary fibre and low in calorie density are consumed, increasing satiety and satiation [9]. Fourthly, it has been discovered that diets high in monounsaturated fat enhance glucose metabolism and boost postprandial fat oxidation, diet-induced thermogenesis, and daily energy expenditure as a whole [9]. Last but not least, dieters enjoy and tolerate the MD quite well, and it has been discovered that compliance with the MD is fairly high [9].

Biological mechanistic data supports the capacity of MD for avoiding weight gain, however the epidemiologic studies for this link is contradictory [9]. It is difficult to examine how nutrition and obesity are related, and methodological distinctions may help to explain why some research is inconsistent with one another [9]. The use of ambiguous concepts of the MD is a significant problem for cohort and cross-sectional studies [9]. A number of studies exclude important elements that define a traditional MD, like olive oil and "wholegrain" cereals [9]. Regarding intervention studies, it is generally recognized that changing eating patterns is quite challenging [9]. Consequently, the various methodological elements that influence an effectiveness and compliance level of MD may also play a role in the variations in weight reduction [9]. The health state of participants, recommended MD type, duration of MD intervention, and extra-healthy lifestyle interventions are a few of these variables. Once more, this makes it challenging to compare the findings across studies [9].

#### **4. Discussion**

It is desirable and has been investigated and determined that the MD pattern can be used in non-Mediterranean settings [1]. It is not necessary for encouraging a Mediterranean diet to result in higher overall food costs [10]. To implement these adjustments, nevertheless, a wide range of eating behaviours must shift, as well as practical tools and knowledge [1]. To achieve healthcare sustainability, every government must immediately embrace laws that make a nutritious diet accessible and affordable for all of us [1]. It is primarily distinguished by a significantly decreased intake red and prepared meat, and by not relying on many complex and expensively marketed products. Instead, it is centred on a very modest set of meals that must be patiently chosen, cleaned, and cooked. This diet is universally applicable [1].

From a sustainability perspective, Assessments have demonstrated that the MD maintained cost-effective, but the choice to adopt its recommendations has changed substantially [1]. In general, people prefer to consume commonplace meals that fit into preset patterns within their culinary culture, allowing each dish to meet a predetermined standard [1]. Cost, inconsistent food tastes, and the idea that following diet advice takes too much effort are typically the main barriers to acceptance [1]. Efforts to guide customers toward less expensive yet nutrient-dense foods have met opposition. In general, people are reluctant to regularly consume these less common meals, especially if they feel as though doing so would imply denying their cultural heritage [1].

Effective changes must be made to the decisions that have an impact on way of life of citizen. The following actions appear to have been successful in achieving this goal: connecting with, educating, and informing citizens; let them have the ability to make informed judgments by directing people to the best and healthiest option [1]. The most obvious solution is still prevention. To encourage more adherence to the MD, it might be considered a primary goal of prevention to stop the spread of the western diet. Despite the high-quality research highlighting the health advantages of the MD, some obstacles frequently make it difficult to follow such a pattern, including a lack of time, a lack of cooking skills, availability, and financial constraints [2]. Therefore, it is crucial to encourage the use of the MD and adapt its features to local food availability as well as culturally and historically suitable variations [2].

## 5. Conclusion

High adherence to the Mediterranean diet has a positive effect on obesity, and the characteristics of the Mediterranean diet may explain the mechanism of weight loss. Despite some problems and limitations in the existing research, the Mediterranean diet can be used as a potential treatment for obesity, and policies can be used to guide people toward healthy eating habits.

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