

What exactly is the Mediterranean Diet and is it the best diet?

The full deal

Introduction

Public health and nutrition advice often references the Mediterranean Diet (Med Diet), as a diet plan for a healthy and long life. Talk of the Med Diet conjures up images of healthy old people sitting at rustic tables in the sunshine eating local produce, olives, salad and fruit, and drinking red wine. This is probably the right image of the Med Diet because it is more a way of life than a diet sheet. This chapter will consider how and why the Med Diet came to prominence together with the evidence of its health benefits.

To set the scene and understand what following the Med Diet means in terms of food consumption the following description copied from Harvard Health (<https://www.health.harvard.edu/blog/a-practical-guide-to-the-mediterranean-diet-2019032116194>) is helpful:

- an abundance of plant foods, including fruits, vegetables, whole grains, nuts and legumes, which are minimally processed, seasonally fresh, and grown locally
- olive oil as the principal source of fat
- cheese and yogurt, consumed daily in low to moderate amounts
- fish and poultry, consumed in low to moderate amounts a few times a week
- red meat, consumed infrequently and in small amounts
- fresh fruit for dessert, with sweets containing added sugars or honey eaten only a few times each week
- wine consumed in low to moderate amounts, usually with meals.

Today the Mediterranean Diet is widely cited as a healthy diet plan by groups including Heart UK (<https://www.heartuk.org.uk/healthy-diets/the-mediterranean-diet>) and the American Heart Association (<https://www.heart.org/en/healthy-living/healthy-eating/eat-smart/nutrition-basics/mediterranean-diet>). It is considered the best diet by a panel of leading medical and nutrition experts who prepare an annual review of diets for US news (<https://health.usnews.com/best-diet/mediterranean-diet>).

When considering the evidence to support a particular diet it is important to consider the difficulties in studying the relationship between diet and health. The health effects of a particular diet may take many years to emerge and people eat a variety of foods and change what they eat over time. In studies, participants may not stick to their assigned diet, and in surveys people may not accurately report what they eat. For these reasons studying isolated populations following a traditional diet, or looking at the effect of diet on short term changes in metabolic markers, rather than long term health outcomes, can be attractive study options.

Studying the Med Diet

The first evidence of the health benefits of the Med Diet came from the seven countries study. This was a major piece of work led by the American physiologist Ancel Keys. The results from the seven countries study have been published in peer reviewed journals and can be accessed through the study's website www.sevencountriesstudy.com.

Pilot studies were carried out between 1952 and 1957. After the pilot studies the data were collected in two parts; phase 1 (1958-1983) which are survey and mortality data in middle aged men from seven countries and phase 2 (1984-1989) which focuses on healthy ageing. The original seven countries are Italy, Greece, the former Yugoslavia, Japan, Finland, the USA and the Netherlands. Groups of men in each of these countries were selected based on factors such as ease of access to data, low or high incidence of cardiovascular disease and adherence to specific diets. Overall, there were 16 different groups across the seven countries. The results showed that following a dietary pattern traditional in the Mediterranean and Japan is associated with a decreased risk of coronary heart disease and all cause mortality. In elderly participants following these diets, together with undertaking physical activity, not smoking and moderate alcohol consumption, there was a lower risk of cardiovascular disease (CVD) and all-cause mortality, and also a reduced risk of cognitive decline and of depression.

The main differences between the Med Diet as described in the seven countries study and the typical diet in North America and Northern Europe were that the Med Diet was mostly vegetarian, with much lower consumption of meat and dairy products, and that fruit was eaten for desert in the Med Diet (Keys, 1995). Another key difference was the high monounsaturated to saturated fats ratio in the Med Diet, arising from the high consumption of olive oil (Trichopoulou and Lagiou, 1997).

There are now 50 years of findings from the seven countries study which show that for the studied groups:

- A diet high in mono and polyunsaturated fats is associated with healthier outcomes than one high in saturated or trans fats
- Low sucrose in the diet is associated with lower cardiovascular risk. No such association was seen for naturally occurring sugars from fruit, milk and grains.
- When the disease risk of sugar is considered alongside the risk of saturated fat, the risk from sugar disappears, suggesting that the observed effect is because sucrose is normally combined in the diet with saturated fat.
- The intake of starch is inversely correlated with cardiovascular disease risk suggesting that plant foods rich in starch and fibre may protect against cardiovascular disease.

It should be noted that all these results are associations or correlations and whilst they are helpful to understand the impact on diet on populations, they do not tell us that it is what is being eaten that is influencing health. It could be that people that eat more mono or polyunsaturated fats do something else, and it is the something else, that is lowering their cardiovascular disease risk. Nevertheless, it is the association between adherence to the Med Diet and the lower risk of cardiovascular disease as reported in the seven countries study that led to the interest in the Med Diet for health.

The seven countries study has been the subject of much debate and criticism since the first results were published with arguments over whether fat or sugar is the major risk factor for cardiovascular disease. The food industry has been accused of funding research to support one or the other view to increase the attractiveness of its products. This though is perhaps missing the point, that it is balance and overall diet quality that is important.

From research to a diet plan

Willets et al (1995) took the findings from the seven countries study and developed a diet plan; specifically, they based their diet recommendations on the diets in Crete, Greece and Southern Italy that had the healthiest outcomes. These of course were the diets consumed by these groups in the

1960s, which may have changed in the time between the collection of data for the seven countries study and the publication of the Willets et al. paper in 1995. The dietary guidance was presented in the form of a pyramid with foods to be eaten in abundance at the bottom of the pyramid, and foods to be limited to occasional eating at the top.

In 2002 an International Task Force on the Med Diet set up by the Foundation for the Advancement of the Mediterranean Diet (Serra-Majen et al. 2004) met to update the original diet pyramid. In the revised pyramid (below) there is more specific information on the food groups to be consumed together with recommended quantities. The dietary advice in this revised pyramid is presented in terms of the overall culture associated with the Mediterranean way of life, with guidance on physical activity, sharing meals in a social environment, seasonality and the preparation of a wide range of dishes.

Mediterranean Diet Pyramid: a lifestyle for today

Guidelines for Adult population

Serving size based on frugality and local habits



Wine in moderation and respecting social beliefs



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Whilst there is no simple diet sheet that defines the Med Diet, the pyramid developed by the International Task Force sets out what experts agree should be eaten to follow this diet plan. The next section looks at the evidence that supports the health benefits of following this diet.

Epidemiological studies

One way to assess the benefits of the Mediterranean diet is follow populations over time and compare the effects on health and longevity of different diets. Researchers have developed methods of scoring diets to measure how they are similar to, or differ from, the ideal Med Diet; diets that

adhere closely get a high score and those that are different and more closely resemble a typical western diet get a low score.

In a review of epidemiological studies of the Med Diet where both adherence to and deviations from the recommendations were recorded, the Med Diet was associated with a decrease in cardiovascular disease morbidity and mortality (Dernini et al. 2012). The same review found many benefits from the Med Diet in interventional studies including decreases in bodyweight, decreases in waist circumference, decreases in metabolic syndrome, decreases in the incidence of type 2 diabetes, decreased cancer risk and decreased risk of neurodegenerative disease.

Mente et al. (2009) conducted a systematic review of the literature on the relationship between diet and coronary heart disease. They found that a diet high in vegetables, nuts and monosaturated fats as in the Med Diet was protective, whereas a typical western diet high in trans-fatty acids and a high glycaemic load was linked to a higher incidence of coronary heart disease.

This literature supports the findings from the seven counties study of the benefits of the Med Diet. Further support comes from a whole country study, where the population has changed diet with the outcome being a positive effect on the population health.

The example of Finland

Finland in the 1970's experienced exceptionally high rates of cardiovascular disease and to try and address these high rates a programme was introduced in one region, North Karelia, that was later extended to the whole country (Puska, 2009). The objective of the programme was to reduce the intake of saturated fat, increase the intake of vegetables and reduce the intake of salt. This was a major public health campaign with multiple targets (health promotion, education, cooperation with industry and changes to policy and legislation) and it has been effective. Across the population there has been a decrease in the markers for cardiovascular disease: blood cholesterol and blood pressure. Cardiovascular disease mortality has decreased and life expectancy has increased by 10 years (Puska, 2009).

The diet recommended for Finland was a variation on the traditional Med Diet. Referred to as the Nordic Diet, it replaces food items typical of the Mediterranean with those found in Nordic countries, but the food groups and macronutrients remain mostly the same. The biggest difference is the replacement of olive oil with rapeseed oil (canola oil). In reviewing the evidence on the Nordic Diet, Krznaric et al. (2021) found that although there is less evidence to support positive health outcomes with the Nordic Diet than with the Med Diet, the studies that have been conducted suggest that the two diets have similar beneficial effects on health outcomes.

Controlled Comparative Studies

Another way to study the impact of a specific diet on health is to ask a large group of people to follow the diet for many years and then monitor the health of the participants. One such major study was conducted by Estruch et al (2018) and it is known in the peer reviewed literature as the PREDIMED study, an acronym in Spanish relating to prevention with the Med Diet. The study was designed to investigate the impact of diet on cardiovascular disease events, and to increase the likelihood of events occurring over the course of the study, participants were selected who had no history of cardiovascular disease, but had either type 2 diabetes or a minimum of three risk factors for cardiovascular disease.

Participants were randomised to one of three diets, a Med Diet supplemented with extra virgin olive oil, a Med Diet supplemented with nuts, or a low-fat diet. The low-fat diet did not have the olive oil,

nuts or fatty fish that are key to the Med Diet. All the participants received dietary advice and support and adherence to the diet plan was assessed regularly. More than seven thousand participants were recruited to the study across multiple sites although some of the results were discounted due to problems with the randomisation procedures. The participants were followed for a median of 4.8 years.

The key finding from the PREDIMED study was that the cumulative incidence of cardiovascular disease incidents was lower in the two groups following the Med Diet than in the low-fat diet group.

Another regularly cited paper in this area is the Lyon Heart Study (Lorgeril et al. 1999). This randomised controlled trial (RCT) differs from the PREDIMED study in that all participants had experienced a myocardial infarction, and the focus was on the prevention of a recurrence of a cardiovascular event requiring hospitalisation. Participants were randomised to either the Med Diet or a prudent western diet. 477 patients were followed up for 46 months and the number of clinical cardiovascular events requiring hospitalisation was recorded.

The authors reported an impressive protective effect for the Med Diet on the likelihood of death from cardiovascular disease or a significant cardiovascular event. They also found that several years after randomisation that patients were following the prescribed diet. In these patients, that had already experienced a myocardial infarction, the authors recommended that the Med Diet should be supplemented by pharmacological treatments to manage known risk factors such as high serum cholesterol.

The PREDIMED and Lyon Heart studies are landmark papers that support the health benefits of the Med Diet. Many other studies have investigated the impact on health outcomes of following a Med Diet and the results of these studies have been combined in reviews and meta-analyses of the data. Sofi et al (2010) reviewed 18 prospective studies that looked at adherence to the Med Diet and clinical outcomes. In all, these studies covered more than two million participants. The review found that following the Med Diet led to a reduced risk of mortality from all sources and a reduced risk of cardiovascular disease. The review also found a reduced incidence of neoplastic disease and neurodegenerative disease in participants who adhered to the Med Diet.

Not all reviews of the evidence are positive in their support for the cardioprotective effects of the Med Diet. Cochrane reviews are highly regarded, objective independent studies. Rees et al. published a Cochrane review in 2019 looking specifically at the effect of the Med Diet on the primary and secondary prevention of cardiovascular disease. The review considered only RCTs where the Med Diet had been administered as an intervention and compared to either another diet, or usual care, and with a minimum of three months follow up. Thirty RCTs and seven on-going studies were included in the review. Overall, the authors found the evidence inconclusive with only modest benefits for the Med Diet on cardiovascular risk factors in primary prevention. They found insufficient evidence on secondary prevention.

This outcome of the Cochrane review seems surprising given the clear results of the PREDIMED and Lyon Heart studies reported above. The discrepancy can be explained by the authors of the Cochrane review downgrading the PREDIMED study because of the methodologic concerns around randomisation and the use of a composite measure of cardiovascular disease. As a result, the Cochrane authors found that the Med Diet was only protective against stroke and did not provide a protective effect in other measures of cardiovascular disease. The authors of the Cochrane review downgraded the evidence from the Lyon Heart Study because of concerns about randomisation procedures and the possibility that the study design could have introduced biases. These

methodological concerns are also voiced by Van Horn et al. (2016) in their review of diet for the American Heart Association. Taking all the evidence together there seem to be benefits from the Med Diet in terms of cardiovascular risk factors and outcomes, but that more research is required to improve understanding of the effects of the diet.

A very recent study, only available as a pre-print at the time of writing which means it has not gone through the peer review process by Ahmad et al (2023) followed 25,315 healthy women, aged 45 at baseline for a mean of 24.7 years. At the start of the study adherence to the Med Diet was assessed and cardiometabolic parameters measured from a blood sample; thereafter the women were followed up for all cause and cardiovascular mortality. The authors noted that the women with the highest adherence to the Med Diet had healthier lifestyles and overall better biomarker profiles at baseline. The study found an inverse relationship between both all cause and cardiovascular mortality and adherence to the Med Diet and the relationship persisted, albeit reduced, after controlling for smoking, physical activity, alcohol intake and menopausal factors. From the cardiometabolic profile the authors believe that the beneficial effect of the Med Diet is mediated through factors related to inflammation and insulin resistance. The authors did not see differences in HbA1c (a long-term measure of glycaemic control), cholesterol or other lipid markers.

One solution to this conflicting picture from different studies on the Med Diet is to conduct an umbrella review that looks at all the data from systematic reviews and meta-analyses. Dinu et al (2020) conducted such a review and examined 80 published reviews covering a wide range of diets. The authors point out some of the difficulties in undertaking this type of overview and the problems they encountered are typical of research in this area. One difficulty is the variability in sample size and another is the range in sample size when comparing studies of different diets. The authors also comment on the poor methodological quality of many of the studies and the risk of bias. The review itself looked at the relationship between diet and both body weight and cardiometabolic risk factors. Overall, the Med Diet performed the best of all the diets studied with beneficial effects on body weight, lipid profile, glycaemic profile and blood pressure, and the beneficial effects were achieved without adverse effects. Some of the other diets studied, for example the Dietary Approaches to Stop Hypertension (DASH) diet and the low carbohydrate diet, had beneficial effects on most of the parameters measured.

Benefits in addition to protection from cardiovascular disease

More recent reviews have looked at the relationship between the Med Diet and specific diseases other than cardiovascular disease. Muscogiuri et al (2022) for example reviewed the literature on the Med Diet and obesity. They found that adherence to the Med Diet is inversely related to Body Mass Index (BMI), weight gain, central adiposity and visceral fat, and in a longitudinal study less gain in central adiposity. They found that administering the Med Diet as an intervention led to weight loss particularly if the administration of the diet was accompanied by calorie restriction and increased physical activity. The authors conclude from their data that the Med Diet may be more effective in southern European populations due to the availability of certain food products and to cultural and genetic factors.

The development of type 2 diabetes

There is evidence that adoption of the Med Diet reduces the likelihood of the development of type 2 diabetes. The PREDIMED study looked at the prevention of diabetes in a subgroup of the trial participants who did not have type 2 diabetes at baseline, but had a high risk of cardiovascular disease but had not experienced a cardiovascular event (Salas-Salvado et al. 2014). In this RCT participants (3,541) were randomised to the Med Diet or to a control diet. Participants were

followed for a median of 4.1 years. In the participants following the Med Diet there was a 30% less chance of developing type 2 diabetes. In the group that followed the Med Diet supplemented with olive oil this risk reduction increased to 40%. In this trial, it was only diet that differed between groups, no attempt was made to restrict calories or increase physical activity, both factors known to reduce the risk of developing type 2 diabetes.

In a systematic review of the literature covering 14 prospective studies and more than 400,000 participants Zeraatalab-Motlagh et al (2022) found a negative dose response relationship between adherence to the Med Diet and the development of type 2 diabetes. The effect was independent of the participants' BMI, energy intake and physical activity.

To try to overcome the difficulties of relying on self-reported dietary intake (Sobiecki et al (2023) used nutritional markers to supplement self-reported dietary intake. The population from this study came from the European Prospective Investigation into Cancer and Nutrition (EPIC) and looked at a sub-population within the larger study. They found an inverse relationship for the biomarker for adherence to the Med Diet with the incidence of type 2 diabetes in the population and that the association was stronger for the biomarker than for self-reported diet studies. The investigators modelled their results and found that an increase of 10% in adherence to the Med Diet could prevent 11% of new type 2 diabetes cases without any changes in body weight.

A consensus report on diet in diabetes and pre-diabetes (Evert et al, 2019) states that the Med Diet reduces the risk of diabetes, reduces HbA1c, lowers triglycerides and reduces the risk of major cardiovascular events. The authors also reported that similar benefits were seen with other diet plans including the DASH, vegetarian/vegan and low-fat diets.

As a result of all this research the benefits of the Med Diet are recognised by the Diabetes and Nutrition Study Group (DSNG, 2023) which recommends the Med Diet for the nutritional management of diabetes.

Cancer

The Lyon Heart study found a reduced risk of cancer incidence in participants following the Med Diet and the PREDIMED study found a reduced risk of cancer mortality in the groups following the Med Diet. As a result of these findings many researchers have investigated whether the Med Diet reduces cancer incidence and mortality. It is not an easy area to investigate; not only are there the issues of all diet studies of assessing diet adherence, but cancer can affect many different parts of the body and in most cases, there is no single cause with genetics, environment, smoking, exposure to toxins, physical activity, sedentary behaviour and other factors all playing a role alongside diet.

Some of the difficulties of examining the relationship between cancer and the Med Diet are exemplified by the meta-analysis carried out by Schwingshackl and Hoffman in 2016. They reported on eleven cohort studies of which only five showed a significant inverse relationship between adherence to the Med Diet and cancer risk. However, when the results from the eleven studies were analysed together, they found an overall reduction in cancer mortality and incidence. They found a reduction in incidence of a number of different cancers including colorectal, breast, stomach, pancreas, prostate, liver, head and neck cancer and cancers of the aerodigestive tract.

Mentella et al (2019) reviewed 53 studies that examined the relationship between the Med Diet and cancer. They found an inverse relationship between adherence to the Med Diet and a number of cancers including breast, colorectal, prostate, stomach, bladder, cervical, endometrial, head and neck, extra hepatic, gall bladder, pancreatic and lung. The authors argue that the benefit of the Med Diet in preventing cancer stems from the high levels of anti-oxidants and anti-inflammatory

compounds in the diet including polyphenols, flavonoids, vitamins C and E, folates and omega 3. They report that not all the studies reviewed show the same benefits from the Med Diet and postulate that this due to the influence of other lifestyle factors such as physical inactivity. They argue that it may be misguided to look at the Med Diet only in terms of food consumed and that it should really be considered as part of an overall healthy lifestyle that includes physical activity.

A more recent review by Naggy et al (2023) covered 15 papers on the Med Diet alongside four on the Ketogenic Diet (high fat, medium protein and low carbohydrate) and four on plant-based eating. The Med Diet was associated with a reduction in cancer development and progression. The authors make the same point about the protective compounds in the Mediterranean Diet as Mentella et al. (2019), and add that the low consumption of red meat minimises the intake of nitrates and polycyclic aromatic hydrocarbons which can damage DNA and lead to cancerous mutations. For the other diets reviewed there was not enough evidence to draw firm conclusions.

Do other diets deliver the same benefits?

For many Western populations adoption of the Med Diet requires major changes in the diet particularly increased consumption of olive oil and vegetables, and eating less red and processed meat, processed foods, sweets and deserts (Martinez-Gonzalez et al 2017). There may be other diets that are equally healthy, but perhaps easier to follow, for populations without easy access to Mediterranean foods.

Part of the problem with studying the Med Diet is its loose definition. Nevertheless, as we have seen, it has its defining characteristics. There are diets that are similar in content to the Med Diet, but the Med Diet is unique in the high intake of fat from olive oil, nuts and fatty fish and also the intake of red wine with meals (Trichopoulou et al. 2014). There are other diets that recommend high plant intake and fish rather than red meat that are more closely defined in terms of type and amounts of food. One such is the DASH diet.

DASH Diet

DASH is an acronym for Dietary Approaches to Stop Hypertension and was developed for heart health. It has some similarities to the Med Diet but it recommends fat free or low-fat dairy and whilst vegetable oils are recommended there is no specific mention of olive oil. Wine with meals is not included. A diagrammatic representation of the diet is provided below reproduced from the US based National Heart, Blood and Lung Institute (<https://www.nhlbi.nih.gov/education/dash-eating-plan>).

DASH Eating Plan

The Benefits: Lowers blood pressure & LDL "bad" cholesterol.



Eat This



Limit This

 Vegetables	 Fatty meats
 Fruits	
 Whole grains	 Full-fat dairy
 Fat-free or low-fat dairy	
 Fish	 Sugar sweetened beverages
 Poultry	
 Beans	 Sweets
 Nuts & seeds	
 Vegetable oils	 Sodium intake

www.nhlbi.nih.gov/DASH



National Heart, Lung,
and Blood Institute



The DASH diet was developed to reduce blood pressure, but it has subsequently been found to reduce the risk of cardiovascular disease and cancer and to reduce insulin resistance and to have a positive impact on blood lipid markers (Soltani et al. 2016). In a review of 13 RCTs, Soltani et al (2016) found that adherence to the DASH diet significantly reduced weight, BMI and waist circumference. The DASH diet was more effective for weight loss if it was linked to calorie restriction. Despite these positive findings the review concluded that the DASH diet was no better than other healthy diets.

Saneei et al (2014) carried out a meta-analysis of data from 17 RCTs and found that following the DASH diet significantly reduced systolic and diastolic blood pressure. The effect of the diet was greatest in participants that suffered from hypertension and where the participants were energy restricted.

In a review of six studies that looked at the relationship between following the DASH diet and the incidence of cardiovascular disease with a follow-up of 7-24 years there was a reduced risk of cardiovascular disease (20%), coronary heart disease (21%), stroke (19%) and heart failure (29%) with a linear association dependent on adherence to the diet, so that greater adherence was associated with greater protection. The authors of the review believe that the benefits of the DASH diet are achieved through blood pressure reduction, reduced fasting blood glucose and reduced cholesterol (total and LDL). The authors do however strike a note of caution in the interpretation of their results because the reduced risk in coronary heart disease and stroke was dependent on the findings of only one of the included studies.

Plant Based Diet

Plant based diets are increasing popularity, but followers of these diets vary considerably in the types of food consumed. This makes studying plant based diets in populations particularly difficult.

An interesting approach to this problem was taken by Lazarova et al (2022). They carried out a population study in Canada linking the nutritional survey with the health data base. They looked specifically at CVD incidence and mortality with an up to ten year follow up. They found no relationship between diet score in terms of plant based eating and cardiovascular events. They did however find that following a plant-based diet had a lower risk of obesity. The authors commented that the results of the study were influenced by the difficulties in defining CVD, inconsistencies in what was eaten in a plant-based diet and the existence of confounding factors such as participation in physical activity. They also thought that the ten-year follow-up may not have been long enough to see health differences and that the single measure of diet from the nutritional survey may not have reflected actual consumption over the whole follow-up period.

A different approach was taken by Bruns et al. (2024) in Germany. They recruited a group of young to middle aged, healthy non-smoking participants, who had been following, for at least a year, either a vegan diet, a flexitarian diet with small amounts of meat, or an omnivore diet with a high meat and processed meat content. There were major differences between the groups in vegetable and fruit consumption. The followers of the vegan diet consumed twice as many vegetables as those on the flexitarian diet and three times the amount of those on the omnivore diet. Those on both the flexitarian and vegan diets ate twice as much fruit as those on the omnivore diet. The investigators found that those following the flexitarian and vegan diets had more favourable lipid profiles, metabolic scores and arterial stiffness than those following the omnivore diet.

Further useful data comes from reviews covering a wide range of publications. Dinu et al (2017) reviewed 108 articles on vegetarian and vegan diets which together covered 130,000 vegetarians and 15,000 vegans. The authors looked at a range of markers associated with chronic disease including BMI and metabolic markers, as well as all cause mortality and the incidence of cardiovascular disease and cancer. They found that most risk factors were decreased in the vegetarians and vegans compared with omnivores. They also found a decrease in the incidence of ischaemic heart disease and total cancer in those following the vegetarian or vegan diet. The authors however comment that this type of study has a risk of bias as it is likely that people adopting a vegan or vegetarian diet also adopt other healthy lifestyle behaviours.

A more recent study by Shan et al (2023) compared four plant focused diets in two large patient cohorts followed up for more than 30 years; Healthy Eating Index, Alternate Mediterranean Diet, Healthful Plant Based Diet Index and Alternative Healthy Eating Index. All these diets emphasise the consumption of vegetables, legumes, fruit, nuts and whole grains, but vary in the amount of meat and fish consumed. In the almost 140,000 participants in the study, there was an inverse relationship

between adherence to one of these healthy plant focused diets and overall mortality. There was a similar inverse relationship between diet adherence and cardiovascular disease, cancer and respiratory disease.

Wisniewska et al (2024) reviewed studies that looked at the incidence of metabolic syndrome and its markers of carbohydrate and fat metabolism that are linked to the development of type 2 diabetes and cardiovascular disease. They found that adherence to a vegetarian diet and vegan diet was associated with a reduced body weight and waist circumference and lower blood pressure. They also found a reduction in cardiovascular risk and mortality, a reduction in all cause mortality and improved metabolic markers. These benefits of the plant-based diets however were not seen when these diets were compared to other healthy diets such as the Med Diet, meaning that the plant based diets were healthy, but not more healthy than the Med Diet. The authors commented on the inconsistency between studies and the variation in what is consumed in plant-based diets which can have a high carbohydrate component and include large amounts of processed foods.

EAT Lancet Diet

The EAT Lancet diet is the product of a commission of dietary and environmental experts chaired by Prof Walter Willett and Prof Johan R  chstr  m. They set out to design a diet that was both healthy for the world's population and sustainable for the planet. Published in 2019 (Willett et al. 2019) the commission based its diet on evidence from interventional RCTs with cardiovascular risk factors as outcomes, large cohort studies examining the relationship between diet and disease outcomes, and RCTs where diets were compared in terms of disease outcomes. The resulting dietary recommendations have many similarities to the Med Diet, see graphic below. The authors of the report calculate that 11 million early adult deaths could be avoided if the world's population followed this diet.

The Planetary Health Diet – reproduced from <https://eatforum.org/eat-lancet-commission/the-planetary-health-diet-and-you/>



The impact of the publication of the EAT lancet diet was reviewed in 2023 by Tulloch et al. They considered 192 papers published in the period (2019-21) and found that there were criticisms of the diet centred around the absence of cultural values, failure to take into account both consumer preferences, and local dependencies on certain foods. Further criticisms concerned the cost of following diet in certain parts of the world and whether the diet delivered adequate micronutrients.

So what should we be eating?

There is certainly a lot of evidence to support the health benefits of the Med Diet, but it is probably not unique in offering a healthy eating plan. Other diets can be healthy too. Diet is very hard to study because people eat a wide variety of foods and change their eating patterns over time. Diet is only one factor to consider in a healthy lifestyle and other factors such as physical activity play a major role on outcomes alongside diet.

The Med Diet is not a diet sheet, but rather an eating culture with a focus on social eating, sharing meals, use of seasonal ingredients and eating a variety of foods. Followers of the traditional Med Diet undertook physical activity and ate frugally. Nevertheless, where the Med Diet has been prescribed to trial participants without asking for other lifestyle changes the health benefits of the Med Diet can be seen.

Of all the diets the evidence to support the Med Diet is the most compelling. Following the diet reduces the risk of chronic diseases such as CVD, type 2 diabetes, neurodegenerative disease and some cancers. Benefits of following the diet can also be seen in metabolic markers for chronic diseases.

That being said it is important to acknowledge the enormous difficulties in studying diet with participants in interventional studies failing to follow prescribed diets for long periods, participants in observational studies inaccurately reporting their food intake, making assumptions that dietary intake reported at the start of the study is maintained over long observation periods.

There is also the issue of confusing a correlation between following the diet and healthy outcomes, with causation. It could be that the people following the Med Diet have other healthy lifestyle behaviours or more favourable genetics. Intervention studies that have controlled diet, but not the other lifestyle factors or genetics, have gone some way to showing that it is the diet that is responsible for the observed benefits.

There are other diets that are similar in the foods recommended to the Med Diet, but are perhaps more straightforward for people that do not live in the Mediterranean area to follow. There is probably more than one healthy diet.

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