



### INTRODUCTION

The Mediterranean diet has long been considered healthy and in particular, cardioprotective. Although the association was first made by the American doctor Ancel Keys over 50 years ago,<sup>1</sup> the diet has attracted considerable interest in the past decade or so, with a large body of observational evidence showing the potential it has to reduce chronic diseases varying from dementia to cancers.<sup>2,3</sup> Perhaps the greatest focus, however, remains on the potential it has to reduce morbidity and mortality in cardiovascular diseases (CVD).

### THE PREDIMED TRIAL

In April 2013, the results of the long awaited PREDIMED (Prevención con Dieta Mediterránea) study were published.<sup>4</sup> This large Spanish trial randomised patients at high risk of CVD to an intervention including advice about the Mediterranean diet alongside supplementation with either olive oils or mixed nuts, or to advise about a low-fat diet in the control arm. Interim analyses of results were sufficiently convincing to prompt the trial to be terminated early. In comparison to the control group, those in the intervention groups had approximately 30% reductions in their risk of developing CVD.

This level of reduction is remarkable for a dietary intervention and will undoubtedly excite many nutritionists and clinicians alike. The trial has a number of limitations, particularly the difficulty establishing the extent to which the reductions seen were due to the intensive dietary advice or the supplementation with oil and nuts.

*'This large Spanish trial randomised patients at high risk of CVD to an intervention including advice about the Mediterranean diet alongside supplementation with either olive oils or mixed nuts.'*

The pragmatic difficulties of undertaking clinical nutrition trials are well established and indeed, this is the reason why observational studies form the bedrock of our evidence base in this area. There also remain unanswered questions about how the findings may be translated to countries outside of the Mediterranean region, where the typical diets may not be entirely amenable to adaptation to features of this diet.

As with any landmark study, interpretations of the results have varied according to the outlook of the reader, with editorials and responses varying in their levels of optimism and criticism. However, in light of these compelling results, we may be tempted to start recommending the Mediterranean diet with greater conviction, particularly to those patients who are concerned about, or at high risk of, developing CVD. Anticipating this, some of the important elements of this dietary pattern are revisited here.

### THE TRADITIONAL MEDITERRANEAN DIET

The traditional Mediterranean diet existed in various forms widely in the fishing villages around the Mediterranean Sea after the Second World War<sup>5</sup> but global urbanisation and the increased availability of processed goods and fast foods have meant it has become increasingly rare. In a 2010 UNESCO report, the diet was inscribed onto the *Representative List of the Intangible Cultural Heritage of Humanity*

*'... in light of these compelling results, we may be tempted to start recommending the Mediterranean diet with greater conviction ...'*

of Spain, Greece, Italy, and Morocco.<sup>6</sup> Although there is no universal diet or single country to model, there are a number of common principles that run throughout. The following points summarise some of these common themes.

#### Fruits and vegetables

Giving the strong tradition of agriculture in the rural communities in this region, it may come as little surprise that fresh fruits and vegetables are integral to the diets of the population. They are, in fact, the focal point of this dietary pattern, with fruits accompanying all meals and vegetables forming the bulk of both lunchtime and evening meals.

#### Knowing your fats

The Mediterranean diet is high in monounsaturated and polyunsaturated fats, which increase high-density lipoprotein (HDL) levels and are high in antioxidants. There is much less room, meanwhile, for saturated fats found in animal fats and many dairy products. Olive oil is considered the main source of dietary fat but the emphasis is on using it raw on salads and bread, as heating it may negate some of the positive benefits. Given the high cost of olive oil, recommendations may include cheaper monounsaturated oils such as canola or peanut oil in cooking because bland flavour is not detected in the cooked foods.

#### Nuts

One of the intervention groups in the

*'The health benefits of the Mediterranean diet are clear.'*

PREDIMED study was assigned to receiving a combination of walnuts, almonds, and hazelnuts with instructions to consume about an ounce of the mix each day. As well as providing unsaturated fats, they form an ideal snack with dried fruits, deterring from unhealthy alternatives such as crisps and chocolate.

#### Fish

The benefits of regular fish consumption on both healthy individuals and those with established CVD is well documented and reflected in national CVD guidelines.<sup>7</sup> With red meat virtually non-existent in the traditional Mediterranean diet, fish is the ideal replacement. In the PREDIMED trial, consumption at least three times a week was advised in both intervention arms.

#### Lifestyle

The word 'diet' originates from the Greek word for lifestyle, 'diaita' and the precise contribution of extra-nutritional aspects of the Mediterranean diet is unclear. As well as physical activity, this also refers to adequate rest time, mealtime sociability, moderate portion sizes, shared culinary activities, and seasonality of food choices, all of which are felt to be important contributing factors.<sup>8</sup> Although the PREDIMED trial looked predominantly at older adults at high CVD risk, the diet is suitable for all members of the family. With increasing rates of childhood obesity, communal eating and adopting healthy lifestyle habits in families may be more relevant than ever.

#### IMPLICATIONS FOR PRIMARY CARE

Diets tend to come in and out of fashion and vary in their popularity with patients. The Mediterranean diet, however, is unusual in that it is essentially an inclusion, rather than exclusion diet. The emphasis is on wise food choices and moderation. As such, although the benefits seen in the PREDIMED study were short and medium term, it essentially represents a long-term dietary change for whole families. It is perhaps better defined as a nutritional model than a diet, reflecting the emphasis on communal meals and intergenerational education about foods. Although the literature exploring the benefits of the diet in childhood is less developed, it has been

demonstrated that high adherence to a traditional Mediterranean diet in childhood can have significant benefits on symptoms of asthma and rhinitis.<sup>9</sup> Given the growing evidence that CVD is linked to childhood risk factors,<sup>10</sup> further work examining the value of this diet for children is warranted.

GPs have the unique privilege of working with families and often treating many generations. They also deal with multimorbidity and health promotion as well as having sufficient continuity in their relationships to allow them to influence lifestyle habits. They are, therefore, in an ideal position to discuss dietary behaviour with patients. The PREDIMED trial demonstrates that the health benefits of the Mediterranean diet are clear, although economic analyses may be needed before changes at policy level are warranted. There must additionally be a responsibility on clinicians, particularly those in primary care, to begin to distil this information in a coherent way to receptive and motivated patients and families.

#### Mohammed Ahmed Rashid,

NIHR Academic Clinical Fellow, The Primary Care Unit, Department of Public Health and Primary Care, University of Cambridge, Cambridge.

#### Provenance

Freely submitted; externally peer reviewed.

DOI: 10.3399/bjgp14X677365

#### ADDRESS FOR CORRESPONDENCE

#### Mohammed Ahmed Rashid

The Primary Care Unit, Department of Public Health and Primary Care, University of Cambridge, Strangeways Research Laboratory, Worts Causeway, Cambridge, CB1 8RN, UK.

E-mail: mar74@medschl.cam.ac.uk

#### REFERENCES

- Keys A, Menotti A, Karvonen MJ, *et al*. The diet and 15-year death rate in the seven countries study. *Am J Epidemiol* 1986; **124**(6): 903-915.
- Lourida I, Soni M, Thompson-Coon J, *et al*. Mediterranean diet, cognitive function, and dementia: a systematic review. *Epidemiology* 2013; **24**(4): 479-489.
- La Vecchia C. Mediterranean diet and cancer. *Public Health Nutr* 2004; **7**(7): 965-968.
- Estruch R, Ros E, Salas-Salvadó J, *et al*. Primary prevention of cardiovascular disease with a Mediterranean diet. *N Engl J Med* 2013; **368**(14): 1279-1290.
- Trichopoulos A, Lagiou P. Healthy traditional Mediterranean diet: an expression of culture, history, and lifestyle. *Nutr Rev* 1997; **55**(11 Pt 1): 383-389.
- UNESCO. Mediterranean diet. Inscribed in 2013 (8.Com) on the Representative List of the Intangible Cultural Heritage of Humanity. <http://www.unesco.org/culture/ich/doc/src/17331-EN.pdf> (accessed 7 Feb 2014).
- British Cardiac Society; British Hypertension Society; Diabetes UK; HEART UK; Primary Care Cardiovascular Society; Stroke Association. JBS 2. Joint British Societies' guidelines on prevention of cardiovascular disease in clinical practice. *Heart* 2005; **91**(5): v1-v52.
- Bach-Faig A, Berry EM, Lairon D, *et al*. Mediterranean diet pyramid today. Science and cultural updates. *Public Health Nutr* 2011; **14**(12A): 2274-2284.
- Chatzi L, Apostolaki G, Bibakis I, *et al*. Protective effect of fruits, vegetables and the Mediterranean diet on asthma and allergies among children in Crete. *Thorax* 2007; **62**(8): 677-683.
- Franks PW, Hanson RL, Knowler WC, *et al*. Childhood obesity, other cardiovascular risk factors, and premature death. *N Engl J Med* 2010; **362**(6): 485-493.