

Infrequently asked questions about the Mediterranean diet

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Abstract

Numerous health benefits have been attributed to the ‘Mediterranean diet’ over the last decades. Selecting foods that were common in the Mediterranean regions (especially Crete) in the 1970s, with a frequent and abundant intake of fruit, vegetables, fish, olive oil and perhaps wine, has been reported to be associated with wide-ranging benefits including improved glucose metabolism and decreased risk of type 2 diabetes, obesity and CVD. While the respective contributions of various types of food have been widely investigated, less attention has been paid to other factors, also characteristic of the Mediterranean lifestyle, which may contribute to the health benefits perhaps as much as specific food choices. Traditionally, the Mediterranean diet was consumed in the context of a particular lifestyle, with a fixed number of daily meals, generally consumed at later hours (compared to North of Europe), and some specific meal-related behaviours such as the post-lunch siesta. In addition, the Mediterranean diet and lifestyle that were so beneficial to health, 40 years ago, were considerably different from present-day practices. The changes are particularly clear in younger individuals and countries of the Mediterranean region presently have the highest child overweight rates in Europe. The present paper will address research about meal and satiety patterns and examine how the recent changes from traditional practices are likely to have an impact on health risks and benefits in Mediterranean populations.

Keywords
Eating pattern
Circadian cycle
Snacking
Satiety
Child obesity

The ‘Mediterranean diet’ has been abundantly promoted for its numerous health benefits, among which are improved glucose metabolism and decreased risk of various conditions such as type 2 diabetes, obesity and CVD. Such benefits were attributed to the specific food choices that were common in countries of the Mediterranean region in the 1970s. It was asserted (and still is) that abundant intake of fruits, vegetables, fish, olive oil, and perhaps wine was responsible for the low rates of metabolic and vascular diseases found in these countries. Numerous experimental confirmations of the beneficial effects of food choices typical of Mediterranean countries have been published and adopting a ‘Mediterranean diet’ has been widely recommended to populations of countries that do not enjoy the climate or the lifestyle of the Mediterranean Sea borders.

A common recommendation is the intake of at least five fruits and vegetables a day wherever you live, although this may be extremely difficult to achieve in certain places, due to climatic and/or economic reasons. The same problem occurs with fresh fish. Wine and olive oil of good quality tend to be expensive in many countries. Should the health benefits of the Mediterranean lifestyle result exclusively from its dietary aspects, then it appears

that in many parts of the world, only people with both sufficient income and willingness to invest in quality food choices will be able to benefit from its dissemination.

The present paper will introduce another perspective on the Mediterranean diet. It seems impossible to sort out to what extent the benefits of the Mediterranean diet, as it existed a few decades ago, had to do with food choices rather than with a number of other aspects of lifestyle that were characteristics of the Mediterranean areas at the time. In Mediterranean countries, there is a tradition of fixed meal patterns, with lunch and dinner taking place rather late in the day, compared to the countries of Northern Europe. The intake of lunch was (and still is in some places) followed by a siesta of variable duration. Lunch intake was therefore followed by a moment of undisturbed enjoyment of satiety. Main meals were predominantly composed of fresh foods often accompanied by local wine and consumed under very convivial circumstances. In other words, the Mediterranean diet was ingested in the context of a complex lifestyle with many characteristics (sea, sun, and siesta among others) that may have contributed to the health benefits generally attributed to the purely dietary aspects.

The typical Mediterranean diet and lifestyle have lost some of their specific traits, as the modern world has

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imposed increasing degrees of globalisation. Unfortunately, few quantitative data are available nowadays about key aspects of the traditional Mediterranean lifestyle. It, therefore, seems impossible to sort out whether any aspect of the Mediterranean lifestyle did contribute to health benefits as much as diet did. The present paper will address scientific works suggesting questions about how various aspects of the Mediterranean eating patterns may have contributed to health benefits. One particularly important question is whether the changes from traditional patterns observed in recent years, particularly among children, are susceptible to affect public health in Mediterranean populations.

A few important aspects of eating patterns

There is no doubt that food choices are an important part of the eating pattern. Nevertheless, other aspects are also important to consider, and science has done so. A few of the crucial aspects of the eating pattern are the number of daily meals, the presence or absence of snacks between meals, the time of day when meals are taken, as well as what happens between eating episodes: satiety. All those factors affect how much is eaten and how well energy intake can be adjusted to match energy needs^(1–3).

The number of daily eating occasions (main meals and snacks) has been extensively studied as one important factor contributing to total energy intake and body weight control^(1,2). Early studies suggested that frequent eating episodes were associated with leanness, whereas having fewer daily meals was associated with overweight⁽⁴⁾. These early notions were soon challenged by more demanding protocols which established that, in fact, overweight persons underreport their number of eating episodes as well as amounts of food ingested. Recent studies actually suggest that number of daily eating episodes may be positively associated with the BMI⁽⁵⁾. One clear change in the lifestyle of children and adults over the last few decades is the increase in occasions for snacking and eating out of home. Although snacking can actually have a beneficial impact on the nutrient content of the diet if healthy snack foods are selected (e.g. fruits, yoghurt, etc.), it is a fact that consumers are increasingly exposed to the presence of convenient, palatable and inexpensive food stimuli in their environment, including in the Mediterranean environment. There are almost no time or place limits to out-of-meal intake, a situation that is new in the Mediterranean cultures and that is likely to induce over-intake in some individuals. Mediterranean countries used to have well-established meal patterns, whereas, present day life conditions multiply the occasions for snacking^(6,7). It is not unreasonable to believe that while adults still benefit from long-established fixed meal habits, children are particularly susceptible to snacking. Indeed many high-fat, high-sugar snack foods

are easy to obtain, do not require any preparation, and can be extremely attractive to children. Needless to say, these snack foods do not correspond to the traditional foods available in the context of the traditional Mediterranean society. Snack foods of the contemporary Mediterranean child were not even available to his/her parents 30 years ago.

Time of meals

Time of meals affects both food choices and energy intake⁽³⁾. Regions of Europe have their own distinctive food choices for breakfast, for example, and the bread-tomato-garlic delight enjoyed by Mediterranean consumers clearly has little in common with the 'cooked breakfasts' of Northern Europe. Many countries of the Mediterranean area, as well as other countries of Europe, traditionally observe a pattern of three main meals a day, plus an occasional snack in the afternoon for children. In the Mediterranean area, dinner takes place relatively late in the evening, in contrast with the early dinners of Scandinavia.

A fixed-meal pattern, whatever are its rules, may be beneficial in that it codifies intake and limits it to particular moments during the day. There are clearly fixed times for eating and other moments when eating is not expected to occur (in other words, satiety periods). Animal and human studies have shown the importance of the alternation between clear-cut periods of eating and satiety to facilitate the adjustment of intake to needs, both in terms of energy and nutrients⁽²⁾. Following a meal, a 'satiety cascade' occurs during which sensory and metabolic mechanisms act in succession to allow the eater to establish conditioned associations between the sensory characteristics of the ingested foods and their post-ingestive nutritional consequences⁽⁸⁾. This complex satiety mechanism is thought to be essential to permit adequate adjustments of further intake to bodily needs^(2,8).

One of the precious aspects of the traditional Mediterranean meal pattern was its meal grammar, with specific times and composition of each meal. The three-meal-a-day pattern is still present^(6,7) but tends to allow more snacking occasions to occur between the main meals. One aspect of the Mediterranean lifestyle that has clearly decreased in frequency is the traditional post-lunch siesta that seemed an optimal circumstance for the experience of the satiety cascade. This is in sharp contrast with the 'post-lunch dip' described by North-European people concerned by their decrease in tonus following lunch⁽⁹⁾.

In different circumstances (North America), it has been shown that the proportion of daily energy taken in the morning *v.* in the evening, has an importance to determine the total daily energy load⁽³⁾. A study based on the Weekly Food Diary method showed that people who ingest larger proportions of their daily intake in the

morning ate less, in terms of energy, than people who ate larger proportions of their daily intake in the evening. Eating early in the day not only predisposes to smaller total energy intake but also to nutrient intakes that are more in agreement with dietary recommendations. Foods typically selected at breakfast or in the morning are generally less fat and richer in carbohydrates than foods typical of the occidental dinner or evening snack.

In Mediterranean countries, the tradition of late lunches and dinners may have been compatible with low rates of metabolic and vascular problems as long as the dietary choices were healthy. It may be different now, with the different food choices proposed by a more industrialised environment with ready-to-eat convenient foods that are appealing especially to children. The 'children's menus' offered by many restaurants of the Mediterranean region, that still offer 'traditional' food to adults, are likely to propose sodas, potatoes and ice cream to young patrons. The combination of late meals plus selection of foods and drinks representative of the present global diet may have some impact on the high overweight and obesity rate seen in children of the Mediterranean area.

Recent epidemiological data suggest that adults of Mediterranean countries have relatively low rates of overweight and obesity among other European countries. It is then particularly strange that overweight and obesity frequencies among children of the Mediterranean region are among the highest of Europe⁽¹⁰⁾. Whatever was protecting their parents from excessive weight does not protect them. While it seems certain that children of today are less active than their parents were a generation ago, it is also probable that food choices are not the same for children and adults in Mediterranean countries.

Meal circumstances

Meals prepared from fresh foods require time and skills. They also are often shared between a number of persons (a family, a group of friends, etc.) during a pleasurable social experience. Although not every meal in the Mediterranean region corresponds to this idyllic picture, meals (and especially family meals) are commonly seen as an important aspect of social life. The importance of 'cuisine', or rather 'cuisines', in the Mediterranean area is one more sign of the special importance of well-organised, well-prepared, well-shared meals in local societies. In this respect also, it seems clear that the circumstances of meal intake have changed in recent years.

In many circumstances, at meal or snack times, individuals or groups of eaters consume food while watching television. Research carried out mainly in America or Northern Europe suggests that time spent watching television is correlated positively with the BMI^(11,12). Watching television while eating can lead to larger intake in both adults^(13,14) and children^(15–17). American scientists

have suggested that viewing television at the time of meal might be one of the determining factors of the obesity epidemic among American children⁽¹²⁾. Its influence on the BMI of Mediterranean children deserves evaluation. The social dimension of the traditional meals could then have exerted a protective limiting effect on meal intake, in addition to the selection of particular types of foods.

Conclusions

The Mediterranean diet has been repeatedly recommended for its manifold benefits on health. It is a well-documented fact that the selection of a variety of foods associated with cultures of the Mediterranean area, a few decades ago, is associated with healthier metabolic and cardio-vascular functions. The present paper underlines that the Mediterranean diet used to be consumed in a specific cultural context which, above and beyond the particular dietary choices, presented several aspects that might have contributed or even enhanced the health benefits attributed to dietary factors. Although it might be too late to obtain valid objective measurements of some critical aspects of the traditional Mediterranean lifestyle, scientific observations suggest that many traditional eating-related practices (the well-organised meal pattern, the experience of satiety, the convivial sharing, the social-familial contacts, etc.) may have played a beneficial part in the impressive good health of Mediterranean populations. Although recommendations for Mediterranean-like food choices are well supported by scientific data, it is likely that recommendations for some other aspects of the Mediterranean lifestyle could be just as beneficial for public health. The lifestyle of children deserves particular attention since the high rates of overweight and obesity in children of Mediterranean countries seem to highlight how much can be lost in one generation.

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