

Availability of Mediterranean and non-Mediterranean foods during the last four decades: comparison of several geographical areas

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Abstract

Objective: The purpose of the present study was to evaluate the changes in the availability of the most important food components of the traditional Mediterranean diet and other food groups in five geographical areas during a 43-year period.

Design: Ecological study with food availability data obtained from FAO food balance sheets in forty-one countries for the period 1961–1965 and 2000–2004.

Setting: Mediterranean, Northern and Central Europe, Other Mediterranean countries and Other Countries of the World were the studied areas.

Results: The main changes since the 1960s, at an availability level, were found in European areas and in Other Mediterranean countries. The greatest changes were found in Mediterranean Europe, recording high availability of non-Mediterranean food groups (animal fats, vegetable oils, sugar and meat), whereas the availability of alcoholic beverages, including wine, and legumes decreased. Despite having lost some of its typical characteristics, Mediterranean Europe has more olive oil, vegetables, fruits and fish available than other areas. Although Northern Europe has a greater availability of non-Mediterranean foods, there has been a tendency towards a decrease in availability of some of these foods and to increase Mediterranean food such as olive oil and fruits.

Conclusions: The present study suggests that European countries, especially those in the Mediterranean area, have experienced a ‘westernisation’ process of food habits, and have increasingly similar patterns of food availability (mainly non-Mediterranean food groups) among them. Measures must be taken to counteract these tendencies and to avoid their possible negative consequences. It is also crucial to find ways to promote and preserve the Mediterranean diet and its lifestyle in modern societies.

Keywords
Food availability
Mediterranean diet
Food balance sheets
Dietary trends
Dietary transition

Scientific evidence shows a protective effect of the traditional Mediterranean diet (MD) and its components in the prevention of several non-communicable diseases (NCD)^(1–4). Olive oil^(5–7), nuts⁽⁸⁾, fish⁽⁹⁾, fruits⁽¹⁰⁾ and vegetables⁽¹¹⁾ have been inferred and associated with an improvement of health status in pathological conditions^(3,12,13).

The MD is characterised by an abundance of plant-origin foods (fruits, vegetable, various forms of cereals, legumes, nuts and seeds); olive oil as a main source of fat; a low-to-moderate intake of dairy products (especially cheese and

yoghurt); a moderately high intake of fish; a low-to-moderate amount of poultry and eggs; a low intake of meat and processed meat products and a low-to-moderate consumption of wine, preferably during meals^(14–17).

Although the main features of the MD have been identified and recognised as constituting a healthy prudent pattern, many aspects are still unclear and controversies surrounding the concept of MD persist. This pattern presents regional variations based on inherited cultural and religious traditions⁽¹⁷⁾ that have influenced food accessibility, and also the geographic proximity among regions may have conditioned the dietary habits of civilisations that had a common core.

Factors such as cultural differences, personal taste and traditions, education, geographic location, access to technology, and health and health attitudes influence

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food preferences and food availability. Notwithstanding, income and the economic environment assumes a crucial role in the context of dietary pattern changes⁽¹⁸⁾. The impact of these determinants on eating behaviour can lead to changes in dietary habits and can help explain the alarming prevalence of chronic diseases, even though their aetiologies may not be fully understood.

This project emerges from the need for an update on the availability of foods considered Mediterranean and to evaluate whether their accessibility has triggered changes in dietary patterns of different European and Mediterranean regions as well as in Other Countries of the World. Evaluating the changes in accessibility to food components has potential Public Health benefits in terms of the design of nutrition policies, and monitoring/assessing the evolution of dietary pattern and health profiles of populations^(19,20).

The main objective of the present paper, conducted for the Third Strategic Report of the Mediterranean Diet Surveillance System, is to evaluate the time trends for a period of 43 years in the availability of the most important food components of the traditional MD in five geographical areas. This will be contrasted with the availability of foods not considered to be Mediterranean.

Methods

Data source

Data on food availability at a country level were obtained from the United Nation's Food and Agricultural Organization (FAO) Food Balance Sheets (FBS) provided by the FAOSTAT database⁽²¹⁾. These are compiled annually and provide an estimate of the food available for human consumption in a country. Total food availability is computed from statistical data on supply (internal production, imports and stock changes), utilisation (exports, feed, seed, industrial use, and non-food uses) and other uses – including losses in transportation, storage and processing. The *per capita* value presented is obtained by dividing the annual amount of each food group by the total population of the country in the same period. The estimated daily energy availability (kJ (kcal)/person/day) is an indirect estimation of food available for human consumption.

The analysed data cover two time periods: 1961–1965 and 2000–2004. In the first period, 5-year averages were calculated. For the last period, an average change per year was determined in order to be able to achieve values that can be extrapolated for a comparable period of time (5 years) and thus analyse trends over 43 years.

Countries were grouped taking into consideration geographic, socio-economic, political, cultural and regional stability⁽²²⁾. Thus, the five areas considered were: Mediterranean Europe (Albania, Cyprus, France, Greece, Italy, Malta, Portugal, Spain, Turkey and Yugoslavia SFR (grouping Bosnia and Herzegovina, Croatia, Serbia and Montenegro, Slovenia, Republic of Macedonia and

Kosovo)); Other Mediterranean countries (Algeria, Egypt, Israel, Lebanon, Libyan Arab Jamahiriya, Morocco, Syrian Arab Republic and Tunisia); Northern Europe (Denmark, Finland, Ireland, Norway, Sweden and United Kingdom); Central Europe (Austria, Bulgaria, Czechoslovakia (grouping Czech Republic and Slovakia), Germany, Hungary, Poland, Romania and Switzerland) and Other Countries of the World (Argentina, Chile, Canada, United States of America, Islamic Republic of Iran, Japan, Mauritania, South Africa and Australia). For this latter group, countries were randomly selected, and include two countries from each continent and Australia. Although Czechoslovakia and Yugoslavia SFR no longer exist, due to the political changes and territorial divisions that have occurred since 1991 conditioning the data collection, this nomenclature was maintained to reduce possible information bias.

We focused on eight traditionally Mediterranean foods and food groups: olive oil, cereals, fruits, vegetables, nuts, fish and seafood^(14,16). The availability of the remaining foods (vegetable oils (except olive oil), sugar and sweeteners, meat, animal fats, alcoholic beverage (except wine)) that are not considered to be traditionally Mediterranean is also studied.

Statistical analysis

A descriptive analysis was made for each food item, with results expressed as mean and SD using the Kolmogorov–Smirnov non-parametric test. The differences to compare food availability in the two periods were obtained by means of paired *t* test. The same test was also applied to compare the food availability means in the different periods analysed among the five areas of study. Additionally, univariate analysis of variance with *post hoc* analysis by the Bonferroni test was applied to compare the results between the groups of countries. Significance was set at the 0.05 level. Statistical analysis of the data was performed using SPSS[®] 14.00 for Windows (SPSS Inc., Chicago, IL, USA).

Results

The mean Mediterranean and non-Mediterranean foods availability was analysed in 1961–1965 and 2000–2004 and food availability trends were described (Fig. 1). In general, from one period to the other, a significant increasing trend was observed for total food availability of the non-Mediterranean food groups (mainly vegetable oils, sugar and sweeteners, and meat) and to a lesser extent, the Mediterranean food groups; there was a significant increase in half of the Mediterranean food groups studied: fruits, vegetables, nuts, fish and seafood ($P < 0.05$). A significant decrease in animal fats and alcoholic beverages availability was also observed.

In further analyses, food availability in both periods was analysed (Fig. 2) and compared amongst the five areas under study (Table 1).

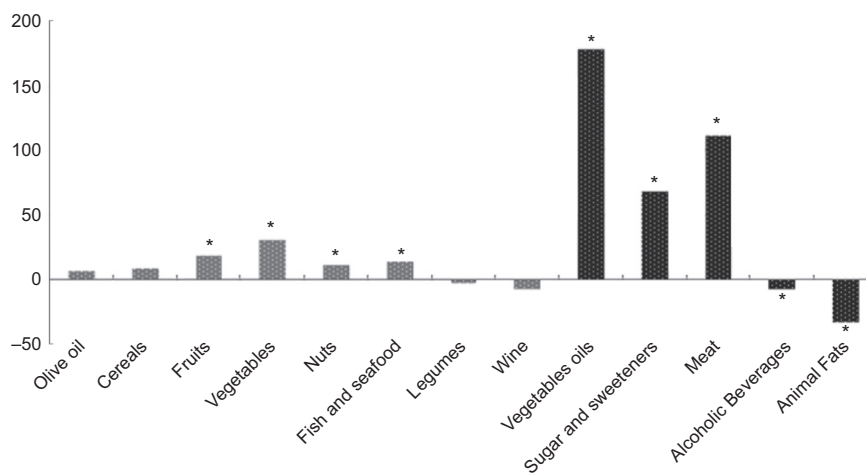


Fig. 1 Changes in mean availability estimates (kcal/person/day) between Mediterranean and non-Mediterranean food groups during the studied periods 2000/04–1961/65. Source: Food and Agriculture Organization food balance sheets. Comparisons among food groups availability in the different periods analysed were performed by paired *t* test ($*P < 0.05$) (□, Mediterranean food groups; ■, non-Mediterranean food groups. Availability changes 2000–2004:1961–1965)

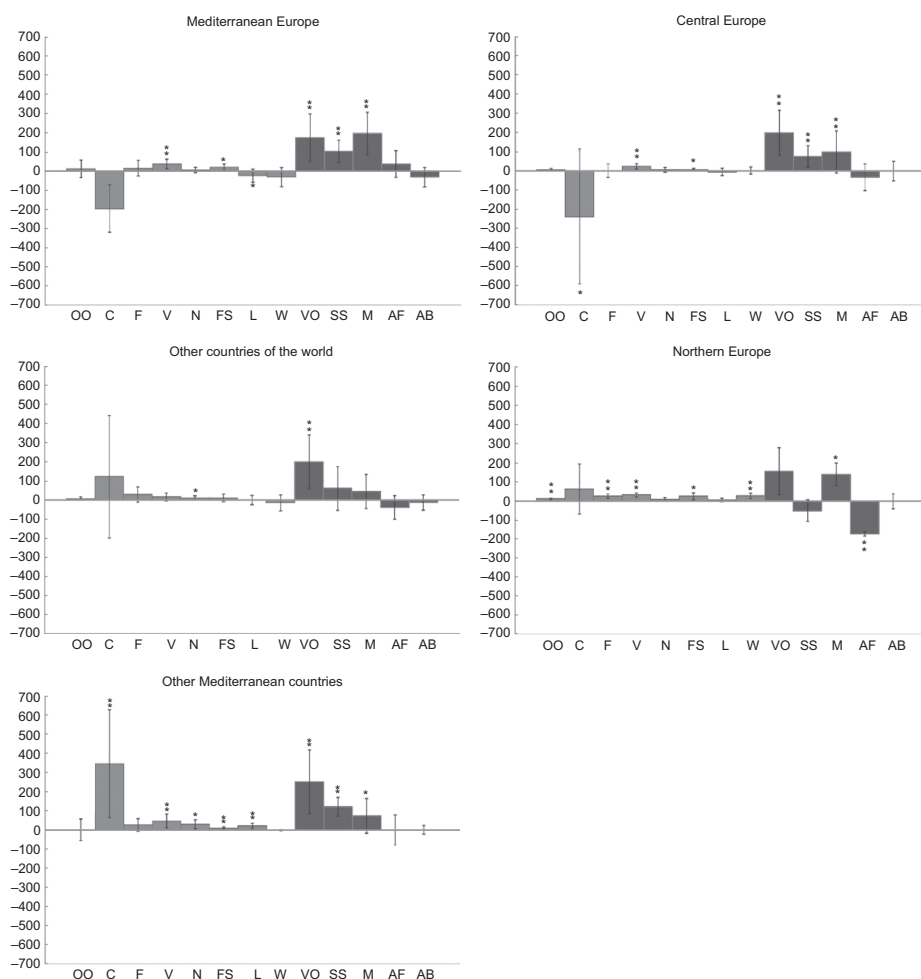


Fig. 2 Changes in mean availability estimates (kcal/person/day) between Mediterranean and non-Mediterranean food groups during the studied periods (2000/04–1961/65) in each studied area. Source: Food and Agriculture Organization food balance sheets. Comparisons among food groups availability trends between the two periods in the different areas analysed were performed by paired *t* test. Significance *P*-values: $**P < 0.01$; $*P < 0.05$. OO, Olive oil; C, Cereals; F, Fruits; V, Vegetables; N, Nuts; FS, Fish and seafood; L, Legumes; W, Wine; VO, Vegetable oils; SS, Sugar and sweeteners; M, Meat; AF, Animal fats; AB, Alcoholic beverage (□, Mediterranean food groups; ■, non-Mediterranean food groups)

Table 1 Mean and sd availability of Mediterranean and non-Mediterranean food groups (kcal/person/day) during the periods 1961–1965 and 2000–2004 in the five geographical areas

Food	Periods	Mediterranean Europe		Other Mediterranean countries		Northern Europe		Central Europe		Other Countries of the World	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Olive oil	1961/65	115.4	120.9	68.6	68.4	1.5	2.3†	2.2	2.8†	3.1	3.8†
	2000/04	127.1	145.9	69.3	64.5	13.0	5.2	7.6	10.0†	9.8	11.4†
Cereals	1961/65	1279.1	300.1	1220.4	186.1	811.2	152.8†	1278.0	410.3	1036.5	318.1
	2000/04	1083.2	287.1	1565.9	365.0†	874.4	77.8§	1038.5	268.0α	1158.0	374.8
Fruits	1961/65	120.1	51.8	104.4	46.5	78.7	15.8	99.4	52.4	69.2	26.8
	2000/04	135.2	33.5	130.1	37.0	104.2	11.5	99.5	35.7	97.0	57.3
Vegetables	1961/65	73.3	22.1	56.2	27.4	27.5	10.5†	50.6	9.8	49.2	24.6
	2000/04	110.0	22.6	103.2	35.3	59.2	10.6†α	74.1	17.5†	65.0	27.4†α
Nuts	1961/65	28.3	14.5	9.1	8.2†	8.4	5.4†	15.9	12.7	4.5	4.7*
	2000/04	34.1	15.9	38.2	31.3	16.5	10.9	21.6	22.5	14.7	13.5
Fish and sea food	1961/65	24.9	21.6	7.9	8.5	41.1	21.3	12.5	6.8	28.5	34.6
	2000/04	44.8	29.2	17.5	8.8	65.3	38.7	19.1	11.6	39.1	51.0
Legumes	1961/65	72.9	30.9	47.5	23.4	14.6	10.4*	24.6	21.7†	41.8	29.8
	2000/04	49.0	25.0	68.4	17.9	20.3	15.6§	18.4	9.9‡	41.2	30.8
Wine	1961/65	78.8	82.2	3.5	3.6†	4.5	2.5	38.2	24.3	35.5	57.5
	2000/04	47.1	38.7	1.9	2.7†	31.4	16.0	39.3	26.3	20.5	20.1
Vegetable oils	1961/65	243.8	71.4	172.7	85.2	173.8	99.0	170.2	95.8	167.3	78.6
	2000/04	418.5	93.6	424.1	157.1	330.4	97.5	368.3	49.8	360.1	135.8
Sugar and sweeteners	1961/65	225.6	98.7	222.4	68.9	465.8	43.7**	331.4	115.1	367.4	139.7
	2000/04	329.2	87.6	342.8	50.5	415.6	49.3	406.1	97.6	419.9	129.6
Meat	1961/65	148.5	99.4	84.4	47.8	280.7	94.0α	257.7	82.3	267.4	195.4α
	2000/04	345.4	137.0α	157.4	105.3	420.7	62.7§	356.7	88.7α	312.1	153.6
Animal fats	1961/65	95.0	69.0	42.8	23.6†	402.3	80.1**Δ	263.8	125.4**+	123.9	122.6
	2000/04	131.9	93.0	40.8	20.4	226.3	108.2+§	230.1	121.4+α	85.1	71.2
Alcoholic beverages	1961/65	58.9	80.0	3.1	4.0	22.5	14.7‡α	26.6	12.8**	34.9	44.1
	2000/04	26.6	32.2	3.5	4.7	21.1	18.1**◇	25.4	23.4**+	21.7	23.5

Source: Food and Agriculture Organization food balance sheets. Mean and sd. Comparisons among areas were accomplished by univariate analysis of variance with *post-hoc* analysis (Bonferroni test). Mediterranean Europe v. all the other studied areas in the same period of time: * $P < 0.001$; † $P < 0.01$; ‡ $P < 0.05$. Other Mediterranean Europe v. all the other studied areas in the same period of time: § $P < 0.001$; ‖ $P < 0.01$; ¶ $P < 0.05$. Other Countries in the World v. the other studied areas in the same period of time: Δ $P < 0.001$; ◇ $P < 0.01$; + $P < 0.05$.

In general, olive oil availability registered a significant increase, which was more pronounced in Northern Europe than in Mediterranean Europe. However, Mediterranean Europe still has the highest olive oil availability.

Between the two periods, an increase in cereals availability was observed in Northern Europe, Other Mediterranean countries and Other Countries of the World. While Mediterranean and Central Europe showed a decrease of about 837.36 (200) and 1046.7 kJ (250 kcal)/person/day respectively (although not statistically significant in Mediterranean Europe), the Other Mediterranean countries presented the highest cereals availability value among the different areas; since the 1960s it has increased by 1444.45 kJ (345 kcal)/person/day ($P < 0.01$). On the other hand, Northern Europe is the area that quantitatively shows the lowest cereals availability in the last period ($P < 0.001$).

In the last decade, a significant increase in availability of fruits was noted in Northern Europe ($P < 0.01$). However, Mediterranean countries maintained the greatest availability among all studied areas.

Nowadays, Mediterranean Europe has a higher availability of vegetables than Other Countries of the World or even other European areas. Although Northern Europe records the lowest average vegetable availability, an increase of about 133.98 kJ (32 kcal)/person/day was observed in the last period.

Other Mediterranean countries present a significant increase of nuts availability during the last period. In the first period, Mediterranean Europe presented the highest nuts availability with statistical significance (except Central Europe). In the second period, the Other Countries of the World recorded an increase about two times more than in the first period. Moreover, nuts availability has tripled in the Other Mediterranean countries (although not statistically significant) compared to the initial period.

Fish and seafood availability significantly increased in all the studied areas, except in the Other Countries of the World. More recently, Mediterranean countries and Northern Europe present the highest amounts of fish and seafood.

In the 1960s, Mediterranean Europe had the greatest legumes availability compared with the other European areas. However, Mediterranean Europe also experienced the greatest decrease in legumes availability between the time periods, with a significant drop of approximately 30%. In contrast, the Other Mediterranean countries experienced a significant increase and had the greatest legumes availability in the last period, with an average of 286.38 kJ (68.4 kcal)/person/day.

Wine availability is five times greater in Northern Europe than the initial period ($P < 0.01$). Mediterranean Europe, Other Mediterranean countries and Other Countries of the World experienced a decrease in wine availability of about 40% compared to the first period (without statistical significance).

Currently, all the studied areas present an increase in vegetable oil availability on a large scale ($P < 0.01$), with

the exception of Northern Europe (not statistically significant). In the past decades, accessibility to vegetable oils has changed significantly, increasing by 731.43 kJ (174.7 kcal)/person/day in Mediterranean countries and by 1052.56 kJ (251.4 kcal)/person/day in Other Mediterranean countries, compared to the first period. At the present time, the most available vegetable oils are rapeseed and mustard seed oil, sunflower seed oil and soybean oil (palm oil in smaller quantities but more available than in the 1960s) (data not shown). The most available vegetable oil in Mediterranean Europe is sunflower seed oil ($P < 0.001$). Other Mediterranean countries, as with Other Countries of the World, have a high availability of soybean oil ($P < 0.05$). In Central and Northern Europe, a significant increase in rapeseed and mustard seed oil availability was observed.

In the 1960s, the availability of sugar and sweeteners was lower in the Mediterranean areas compared to Northern Europe ($P < 0.001$). However, in the last period, Mediterranean Europe, Central Europe and Other Mediterranean countries recorded a significantly higher availability of this food group. On the other hand, Northern Europe experienced a decrease of 10% (about 209.34 kJ (50 kcal)/person/day).

In the first period, the Other Mediterranean countries had the lowest meat availability and Mediterranean Europe second lowest, compared to Northern Europe and Other Countries of the World ($P < 0.05$). In the second period, availability remained higher in all European areas with respect to the Other Mediterranean countries. Analysing the availability between both periods, there was a general increase in meat availability in all areas. For instance, Mediterranean Europe currently has 822.71 kJ (196.5 kcal) more meat available than in the 1960s. In line with this upward trend, Northern Europe and Other Mediterranean countries have 586.15 kJ (140 kcal) and 305.64 kJ (73 kcal) more meat available, respectively. Analysing the specific types of meat available (data not shown), Mediterranean Europe has more bovine meat available (not statistically significant), followed by poultry meat, pork and other meat ($P < 0.05$). In the last four decades, a significant increase in poultry meat availability was observed in all studied areas, compared to the first time period (maximum 573.17 kJ (136.9 kcal)/person/day in Mediterranean Europe and minimum 148.21 kJ (35.4 kcal)/person/day in the Other Mediterranean countries).

Mediterranean Europe areas recorded the lowest animal fat availability in the first period. In contrast, Northern and Central Europe had the highest animal fat availability, with an average of 1684.35 kJ (402.3 kcal)/person/day and 1104.48 kJ (263.8 kcal)/person/day, respectively. During the study period, Mediterranean Europe was the only area to experience an increase of animal fat availability (of about 40%), whereas Northern Europe experienced a significant decrease to the same proportion. Although the availability of animal fats in Mediterranean

Europe has increased, it is still half of that available in Northern Europe.

In the 1960s, the Mediterranean areas had a significantly higher availability of alcoholic beverages compared to Northern and Central Europe. Alcohol availability in Mediterranean Europe decreased by about 50% between the time periods, although the availability still remained slightly higher (and statistically significant) in comparison to the other studied areas.

Discussion

This research focuses on the main changes that have occurred in the availability of Mediterranean and non-Mediterranean food groups in different areas during the last 40 years. Through the use of the same methodology for collection and treatment of data, homogeneity and consistency was achieved throughout the period and among different groups areas of countries. In order to assess long-term food availability trends, FBS data were analysed. To accurately evaluate food availability, two periods were studied, each period including five consecutive years. Five-year averages were considered in each period⁽¹⁹⁾, particularly to minimise some errors and interannual variability deviations⁽²²⁾.

There are some inherent limitations with the use of FAO's FBS and its applicability that should be acknowledged and taken into consideration when interpreting the results. The values represent the quantities of food available for human consumption but not the real amount consumed, which is lower than the available amount. For instance, the data do not take into consideration any loss of edible foods due to preparation, or waste, and home-made production as well⁽²³⁾. In addition, this methodology does not permit an evaluation of differences by age groups, socio-economic levels, regional and seasonal differences, as it only gives an average picture of energy per capita^(22,24). Data from FBS can also overestimate the actual consumption in developed countries, while tending to underestimate food supply in developing countries⁽²⁵⁾. This occurs since the statistical data came from several sources, both among the different countries and within the same country, changing over time. Also, the quality of information and the gathering of all items that estimate the availability may be conditioned, producing systematic errors that may possibly increase the margin of error^(24,26,27).

When comparing the three levels of food consumption measurement (FBS, Household Budget Surveys (HBS) and Individual Dietary Surveys (IDS)), the FBS overestimated food consumption compared to IDS⁽²⁵⁾. The observed discrepancies between these data sources could be attributed to identifiable differences in the methodological approaches^(25,28,29). So, we should appeal to these methods as complementary approaches in the analysis of the population's consumption^(29,30).

However, it should not be forgotten that FBS is the only tool that provides periodical and standardised information on food availability and, therefore, allows longitudinal comparisons across countries and time. It is also an economical and quick⁽²²⁾ approach to obtain the food supply available for consumption. Furthermore, food habits and health relationships^(16,30,31) can be explored using this ecological data.

Several geographical, historical and cultural criteria were considered for the grouping of the countries⁽³²⁾. In a similar way, the grouping of European countries into three areas (Northern, Eastern, Southern or Mediterranean Europe) was realised by Balanza *et al.*, considering well-defined criteria for each area⁽²²⁾. On the other hand, others countries and areas were also studied. The group Other Countries of the World is the most heterogeneous group. These countries were randomly selected to have a sample of several countries from the different continents, and as it is the case of some (Australia, Chile, etc) for their Mediterranean-like climate in some areas of its geography. Geography has traditionally conditioned food availability and, consequently, greatly influenced dietary patterns. However, for climatic reasons, other countries far from the Mediterranean area contain several Mediterranean traits in their eating habits.

In the early 1960s, many differences in food availability were observed among the five studied areas. As previously mentioned, most differences were observed in Mediterranean Europe in comparison to the Northern and Central Europe, which is reflected in differences in population's health⁽¹⁾. The dietary pattern in Mediterranean Europe was characterised by Mediterranean foods and a low availability of other foods such as sugar and animal fat⁽⁴⁾. In contrast, Central and Northern Europe recorded the highest non-Mediterranean food availability, especially sugar and animal fat. Since then, the main changes in food availability had been found in the European areas and in Other Mediterranean countries, especially in terms of food quality. The analysis of availability by food group in the three previously mentioned European areas confirms the growing similarity among them. In general, the trend is an increase in availability of all kinds of food and the calories they contribute to the diet, which is also reported in other studies^(33–35).

Currently, in Northern Europe more amounts of olive oil, fruits, vegetables, fish and seafood and wine (five-fold increase) are available compared to the first period. A downward trend was observed in the cereals availability, approximately a 10% decrease in sugar and a 40% reduction in animal fat availability. Despite this, the total available animal fats amount still remains as high as in Central Europe. In the current period, high quantities of meat are available in this area as observed in the early 1960s (especially, bovine and poultry meat). There is some similarity between Central and Northern Europe regarding availability by food group. However, Central

Europe stands out due to a decline of almost 20% in their cereals availability.

Northern Europe seems to be adopting a healthier dietary pattern. For many decades, they had a low availability of total fruits and vegetables⁽²⁶⁾, possibly due to limited availability and high prices. However, some recent improvement in their availability has been noted⁽²²⁾. Considerable investment in measures at different sectors such as food pricing and taxes, food production, industry and retail, catering, as well as the implementation of nutrition education^(20,36), are likely to have helped encourage the population to adopt better dietary choices⁽³⁷⁾.

Nowadays, the Other Mediterranean countries have a greater quantity of cereals, vegetables, fish and legumes at their disposal, maintaining the base of the Mediterranean dietary pattern. This trend is probably influenced by improvements in commercial trade routes and a better utilisation of the natural resources^(23,38). Also, a high availability of vegetable oils and sugar was recorded, reflecting specific traditional dietary habits⁽³⁸⁾. The consumption of wine remains low, partly due to religious beliefs and traditions⁽²⁶⁾.

In the last four decades, Other Countries of the World showed a decrease of available animal fats (without statistical significance), while the availability of vegetable oils gradually increased in this broad area ($P < 0.05$). Technological advances have encouraged this trend, with a higher capacity of production. Since the 1960s, vegetable oil supply has increased due to their growing demand. Consequently, a greater movement of product with high durability and advantages at the market level has been observed, resulting in greater availability and a decrease of final food cost⁽¹⁹⁾.

Mediterranean Europe was the area that experienced the greatest number of changes in availability since the 1960s. Food availability changes in this area include: (i) an emergent increase of sugar and sweeteners, as with other Mediterranean countries, (ii) an increase of 822.71 kJ (196.5 kcal)/person/day of meat, namely poultry meat; (iii) one of the highest availability of vegetable oils, mainly sunflower seed oil; (iv) an increase of about 40% of animal fats, but still below the availability amounts in Northern Central Europe; (v) a decrease of 50% in the availability of alcoholic beverages; and, (vi), a decrease in the availability of cereals and wine (not statistically significant) and legumes ($P < 0.05$). Despite all these shifts, this area maintains the highest availability of olive oil and fruit, and over time, a slight increase in the availability of vegetables, fish and seafood was found. Previous studies have also observed an increase in vegetables and fruits⁽³³⁾, and a decrease in cereals and wine⁽²³⁾ and legumes. In terms of data on oil food groups, the fact that these food groups have the greatest difference between availability and the actual intake⁽³³⁾ should be taken into account.

Other authors have reported similar trends in the Mediterranean area⁽²²⁾ when evaluating how diets have

changed in the last decades, using the same food availability measurement tools (FBS)^(22,23), or different methods such as HBS⁽³⁹⁾ or IDS⁽⁴⁰⁾.

Despite the contemporary dietary patterns in the Mediterranean area that have moved towards a more westernised pattern, their diets still maintain some typical components of its traditional dietary pattern⁽²³⁾. This area remains the largest producers of Mediterranean foods such as olive oil and fish, due to conditions that provide successful utilisation of its rich natural resources. Olive oil and fish provide a healthy lipid profile that presents benefits in nutritional quality in terms of the composition of unsaturated fats, compared to other fat sources⁽³³⁾. This has been gaining importance in terms of public health. Moreover, in the case of olive oil, regions such as North America and non-Mediterranean Europe, and countries such as Japan, Australia and Brazil have been reported to be importing a considerable part of olive oil produced in Mediterranean areas^(34,41). Thus, Mediterranean foods seem to be gaining ground in the competitive market.

On the other hand, food production and its cost may affect the final food cost-effectiveness and accessibility. Likewise, the cost of transport and the constant fluctuations in fuel prices may affect the price of products and, thus, the final consumer choice^(18,42). In addition, there are still difficulties in finding ways to preserve perishable foods for a long time period without losing some nutritional components, despite the efforts made by the food industry to extend shelf-life through innovative conservation techniques and packaging. And also, the value-added products seem to be replacing staple foods and fresh products⁽¹⁸⁾.

A global change in eating habits of different civilisations has been described in the context of the nutrition transition⁽⁴³⁾. Shifts can be partially explained by urbanisation, income growth, food industry modernisation, implementation of fast-food and globalisation⁽³⁴⁾. Thus, industrialised countries are moving with large strides towards a westernised dietary pattern characterised by a high energy intake⁽¹⁹⁾ and energy-dense foods, increased consumption of animal products, fast food and processed food, lower intakes of fibre, higher amounts of saturated fat, sugar and salt, and the shift from vegetable oils to animal fats^(23,31,44).

This trend has been observed in Mediterranean countries such as Greece and Spain, where the availability of these 'westernised' foods has sharply increased in detriment of cereals and vegetables⁽³⁷⁾. Socioeconomic changes, economic growth, expansion and development of several sectors were impelled in order to integrate into the European Union^(35,45). Consequently, the frontiers were opened for food diversity. Obviously, the purchasing power, the income growth and the increased demand of certain foods could have conditioned food behaviour modifications^(43,45,46). Therefore, a trend from the distinct and varied dietary pattern in 1960 to an undifferentiated pattern in 2000 has been observed^(23,31), which reflected in the food availability trends presented here. Hence, the

distances between countries and continents that used to suppose a barrier to trade and determined many similarities in food consumption patterns among neighbouring countries have less influence⁽³³⁾.

All observed changes could have a long-term impact on health. Nowadays, some evidence has emerged that the nutrition transition has probably largely contributed to the prevalence of chronic NCD in industrialised countries^(34,47). In some countries such as Spain and Greece, an increase in the prevalence of obesity has been reported^(19,48) as a clear consequence of the changing dietary and lifestyle behaviours.

An adoption of the Mediterranean dietary pattern that primes variety, balance, freshness and seasonal products, could mitigate the adverse effects of the nutritional transitions experienced in the vast majority of countries. The MD might be the key to surpass this stage because it is recognised as a healthy eating pattern as well as a tradition and lifestyle^(14,15,44). The WHO recommendations for healthy habits are remarkably similar to those considered by the Mediterranean patterns⁽³³⁾.

Practical interventions should be designed to preserve and encourage the practice of a Mediterranean lifestyle, to enable the communication of its benefits in the media to the population as well as nutritional education. It was also shown that interventions that focused on changing eating habits, adopting the Mediterranean Diet, have a lower cost compared to others⁽⁴⁹⁾. Even the catering sector should encourage the consumption of Mediterranean foods away from the home, providing the opportunity to choose typical menus at an affordable cost^(19,26).

Therefore, Public Health entities should evaluate Nutrition Policies at a national level to improve innovative techniques at local agro-food productions and increase the trade of these foods at low cost to promote the main components of the MD⁽⁵⁰⁾. Preventive strategies that can help preserve the singularities of this lifestyle and promote healthy Mediterranean foods should be taken into consideration, in order to avoid the progressive and detrimental changes in dietary and health patterns that are increasingly prominent in Western societies.

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