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Worldwide variation of adherence to the Mediterranean diet, in 1961–1965 and 2000–2003

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Abstract

Objective: The present study aimed to analyse the worldwide trends of adherence to the Mediterranean diet (MD), in 1961–1965 and 2000–2003.

Design: Data were obtained from the FAO food balance sheets in two periods: 1961–1965 and 2000–2003. In order to have a sample from across the world, forty-one countries were selected. The average of available energy for different food groups was calculated for all selected countries. These values were used to evaluate the adherence to the MD through a variation of Mediterranean Adequacy Index (MAI).

Results: The majority of the forty-one countries in this study have tended to drift away from a Mediterranean-like dietary pattern. Mediterranean Europe and the Other Mediterranean country groups suffered a significant decrease in their MAI values. The Mediterranean European group, especially Greece, experienced the greatest decrease in MAI value.

In both periods, the Other Mediterranean countries showed the highest MAI values. In an analysis by countries, Iran had the highest increase in MAI across the time periods, and Egypt occupied the first place in the ranking in 2000–2003.

The Northern European group was the only one that registered an increase in MAI, although this was not statistically significant.

Conclusions: Many countries in the Mediterranean basin are drifting away from the Mediterranean dietary pattern (MDP). However, countries in Northern Europe and some other countries around the world are taking on a Mediterranean-like dietary pattern. The Other Mediterranean countries have the closest adherence to the MDP, currently and in the 1960s. Nutrition policy actions to tackle dietary westernisation and preserve the healthy prudent MDP are required.

Keywords
Mediterranean diet
Mediterranean adequacy index
Food balance sheets
Westernisation

The definition of Mediterranean diet (MD) is not consensual, partly because this dietary pattern is fairly heterogeneous among Mediterranean countries and also within the countries themselves[1,2]. Many studies have defined the MD pattern identifying several common features[3–6]; a high consumption of plant foods such as legumes, cereals, fruits and vegetables, nuts and seeds, low consumption of meat and dairy products, olive oil as main source of fat and moderate consumption of wine. Overall, the Mediterranean dietary pattern is considered a healthy prudent dietary pattern and a high adherence to it has been associated with a better health status, due to the protective effect that this pattern shows against various chronic diseases[7–9].

Based on the above features, many food indexes have been developed to evaluate the benefits of this dietary pattern[10]. The Mediterranean adequacy index (MAI) is one of such indexes, and has been used to study the adherence of a country or a population to the MD[11–14]. However, it is important to remember that the definition presented by Ancel Keys, in the 1960s, for the MD and the concept of the traditional Mediterranean dietary pattern is changing and is being influenced by globalisation[5].

This study was integrated in the Third Strategic Report of the Mediterranean Diet Surveillance System, and aims to evaluate how the adherence to the MD has changed on

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a worldwide scale, in two time periods: 1961–1965 and 2000–2003.

Methods

The data were obtained from the FAO food balance sheets (FBS) that contain information about national food availability in the world. This food availability reflects production, supply and different human utilisation of foodstuff during a certain time period in a specific country. Foodstuff that is exported, for non-human use, for seed and foodstuff that is lost, is subtracted from the quantity of foodstuff produced and imported. The final value indicates the quantity of food available for human consumption. Subsequently, to obtain the per capita supply for each food group the available energy value for each group is divided by the total population of the country in the corresponding time period[12,15].

Forty-one countries were selected to constitute a worldwide sample and were first separated into Mediterranean or Non-Mediterranean. Then, a second division was made which included five areas, dividing Mediterranean countries in Mediterranean Europe (Albania, Cyprus, France, Greece, Italy, Malta, Portugal, Spain, Turkey, Yugoslavia SFR) and Other Mediterranean countries (African, Middle East, Algeria, Egypt, Israel, Lebanon, Libyan Arab Jamahiriya, Morocco, Syria, Tunisia). Non-Mediterranean countries were divided into Central Europe (Austria, Bulgaria, Czechoslovakia, Germany, Hungary, Poland, Romania, Switzerland), Northern Europe (Denmark, Finland, Ireland, Norway, Sweden, United Kingdom) and Other World countries (Argentina, Australia, Canada, Chile, Islamic Republic of Iran, Japan, Mauritania, South Africa, United States of America). Geographical, cultural and socio-economic factors were taken into account for these groupings[12].

Yugoslavia SFR and Czechoslovakia suffered political changes between the studied periods and subsequently divided into several other countries. However, FAO data pertain to the former areas of Yugoslavia SFR which group together: Bosnia-Herzegovina, Croatia, Kosovo, Macedonia, Montenegro, Serbia and Slovenia, and the former Czechoslovakia, which includes Czech Republic and Slovakia[15].

The average energy availability (calories/capita/day) from the different food groups was calculated, for all countries, in two time periods: 1961–1965 and 2000–2003. Adherence to the MD was calculated through an adaptation of the MAI defined by Alberti-Fidanza *et al.*[16], the main difference being the selection and the classification of the Mediterranean and Non-Mediterranean products. MAI is calculated by dividing the energy provided by the total sum of Mediterranean food groups by the energy from the Non-Mediterranean food groups[13,17,18]. Higher MAI value of a country indicates a greater adherence to the Mediterranean dietary pattern.

The Mediterranean food groups considered were olive oil, olives, cereals (beer was excluded from the cereal group), starchy roots, herbs and spices, fruits (except wine grapes), vegetables, nuts, fish and seafood, legumes and wine. The Non-Mediterranean food groups were other sources of fat apart from olive oil, sugar and sweeteners, alcoholic beverages (except wine and beer), meat, beer, sugar crops, oil crops, offal, stimulants (coffee, cocoa beans, tea), animal fat and miscellaneous products. Eggs and dairy products were not considered in this study because they were considered elements common to all dietary patterns.

Different statistical tests were used to analyse the data with the statistical software SPSS® (Statistical Package for the Social Sciences; version 16 for Macintosh). Univariant analysis of variance with *post hoc* analysis by the Bonferroni test was applied to compare the MAI values in the different areas for both periods. A *t* test for independent samples was used to verify the MAI differences between Mediterranean and Non-Mediterranean countries in both time periods. Paired samples *t* tests were used to compare the MAI value of each group of countries between the two periods of time. Finally, one-sample *t* tests were computed to compare worldwide MAI in both time periods with the MAI of each area. The worldwide MAI value used in these tests came from FAO's data provided by all the countries in the world and not just the countries selected for the study. Significance was set at the 0·05 level.

Results

Comparison between worldwide MAI and the MAI in different country groups

The worldwide MAI value calculated with data from 169 countries and regions was 2·86 in the first period (1961–1965) and 2·03 in the second period (2000–2003). Initially, the average MAI of all selected countries in this study was 2·38 (SD 1·47) but in the second period it dropped to 1·51 (SD 0·88) ($P < 0·05$) (Table 1).

Comparing the worldwide MAI and the MAI for all selected countries, in both time periods, it is possible to verify that globally the World has the highest values (Table 1).

In the first time period, the MAI of the Mediterranean countries was higher than that of the World (Table 1), although not statistically significant. In the Non-Mediterranean groups, MAI values were significantly lower ($P < 0·05$) than that of the worldwide MAI.

In the second time period, both groups of Mediterranean and Non-Mediterranean countries had lower MAI values than the worldwide MAI value (Table 1), however, only the difference presented by the Non-Mediterranean countries was statistically significant.

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Table 1 Mediterranean adequacy index (MAI) values for all studied country groups in both time periods (1961–1965 and 2000–2003)

	Groups	*n*	MAI value			
			Mean	SD	Min	Max
1961–1965	World	169	2·86	NA	NA	NA
	All Selected countries	41	2·38	1·47	0·63	5·54
	Mediterranean countries	18	3·44	1·24	1·28	5·54
	Non-Mediterranean countries	23	1·55	1·06	0·63	4·11
	Mediterranean Europe	10	3·41	1·45	1·28	5·54
	Other Mediterranean countries	8	3·48	1·01	1·62	4·81
	Central Europe	8	1·71	1·08	0·82	3·89
	North Europe	6	0·83	0·16	0·67	1·04
	Other World countries	9	1·90	1·22	0·63	4·11
2000–2003	World	169	2·03	NA	NA	NA
	All Selected countries	41	1·51	0·88	0·64	4·09
	Mediterranean countries	18	1·98	0·90	0·82	4·09
	Non-Mediterranean countries	23	1·14	0·67	0·64	3·65
	Mediterranean Europe	10	1·58	0·67	0·82	2·80
	Other Mediterranean countries	8	2·49	0·93	1·09	4·09
	Central Europe	8	1·01	0·45	0·72	2·02
	North Europe	6	0·85	0·07	0·76	0·97
	Other World countries	9	1·45	0·94	0·64	3·65

Min, minimum; Max, maximum; NA, not available.

Only the Other Mediterranean countries presented a MAI value above the worldwide MAI ($P > 0·05$). The differences between the World and Central and Northern Europe were statistically significant.

Comparison between the MAI values of Mediterranean and Non-Mediterranean countries

Mediterranean countries showed the highest MAI values in both periods. However, a significant decrease was observed between the four decades (Table 1). This was more marked in Mediterranean countries compared to the other country groups (1·45 (SD 0·99) and 0·41 (SD 0·76), respectively).

Comparison of the adherence to a Mediterranean-like food pattern among the five defined country groups

Mediterranean Europe and Other Mediterranean countries suffered a significant decrease of MAI during the studied period. Northern Europe was the only group that experienced an increase of MAI, although this was not significant. The area covering the Mediterranean basin experienced the greatest MAI changes in the studied time frames (Fig. 2).

In 1961–1965, both groups of Mediterranean countries (Mediterranean Europe and Other Mediterranean countries) presented a significantly higher adherence to the Mediterranean pattern in comparison with the Non-Mediterranean Europe (Central and Northern Europe). However, in the second period, only the Other Mediterranean countries group presented a significantly higher value of MAI than all the Non-Mediterranean groups of countries.

In both periods, the group of Other Mediterranean countries presented the highest adherence to the MD of all studied areas. The difference in MAI values between Other Mediterranean countries and Mediterranean Europe increased with time, although this difference was not statistically significant.

Mediterranean Europe experienced a significantly greater decrease in MAI, from one period to the other, compared to the Non-Mediterranean country groups (Central Europe, Northern Europe and Other World countries) (Figs 1 and 2).

The average MAI in the different areas, listed from the highest to the lowest, is as follows: Other Mediterranean Countries, Mediterranean Europe, Other World Countries, Central Europe and Northern Europe. Despite all the internal changes that each group of countries may have experienced throughout the two time periods, the order of the ranking has remained the same.

Ranking of countries by MAI

Table 2 shows that in the period of 1961–1965 there were fifteen countries with MAI values higher than 3·00. Of note is that three of these countries (Greece, Albania and Turkey) had MAI values over 5·00 and they were all countries from Mediterranean Europe. Only two of the countries with MAI above 3·00 were not Mediterranean ones; Japan and Romania, which ranked sixth and seventh place, with MAI values of 4·11 and 3·89, respectively. The remaining thirteen Mediterranean countries were distributed similarly between European (seven countries) and Non-European (six countries).

The Central European countries with the highest MAI values were Romania and Bulgaria, with MAI values of 3·89 and 2·68, respectively.

In the second time period, no country had a MAI value over 5·00 and only Egypt (4·09) presented a MAI value above 4·00. The group of fifteen countries with MAI values higher than 3·00 was reduced to a group of three

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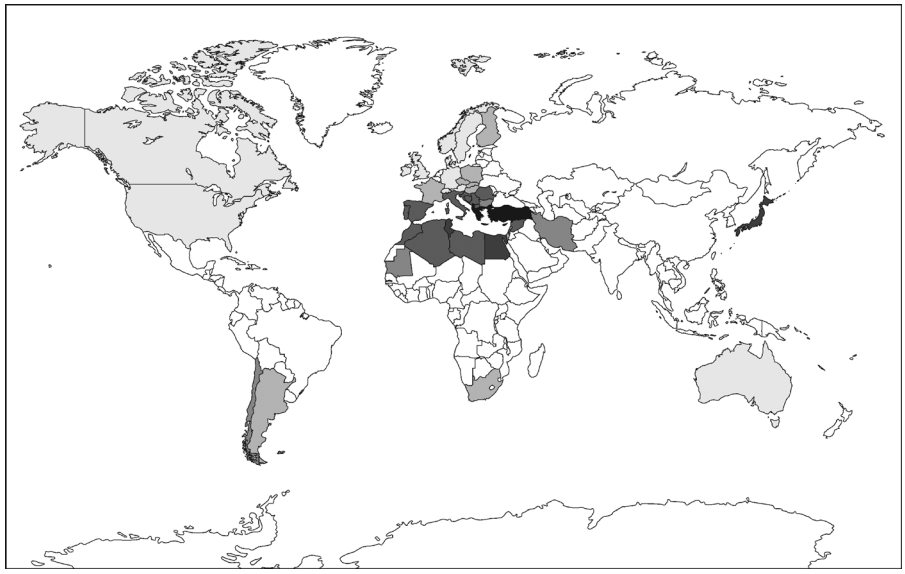

Fig. 1 World Map of the adherence to the Mediterranean dietary pattern, comparing Mediterranean adequacy index value, in the period of 1961–1965 (□, 0·00–0·99; ▒, 1·00–1·99; ▒, 2·00–2·99; ▒, 3·00–3·99; ▒, 4·00–4·99; ■, 5·00–5·99)

Fig. 2 Map of the adherence to the Mediterranean dietary pattern, comparing Mediterranean adequacy index value, in the period of 2000–2003 (□, 0·00–0·99; ▒, 1·00–1·99; ▒, 2·00–2·99; ▒, 3·00–3·99; ▒, 4·00–4·99)

countries, which, besides Egypt, includes Iran (3·65) and Morocco (3·25) (Table 2). In the first block of fifteen countries in the ranking, there were seven countries from the group of Other Mediterranean countries and only three from Mediterranean Europe. Throughout the study period, the number of Non-Mediterranean countries within the top fifteen doubled, from two to four.

Romania and Bulgaria maintained the highest MAI values within the Central European countries, despite experiencing the largest decrease from one period to the other (1·87 and 1·48, respectively).

Between 1961–1965 and 2000–2003, all the Mediterranean countries and most of the Non-Mediterranean countries suffered a decrease in their MAI values. Greece showed the largest decrease, followed by Japan, Albania and Turkey (Fig. 3). These countries were in the first six places in the ranking during the first period, but in the second period fell to fifth (Turkey), seventh (Albania), tenth (Greece) and sixteenth places (Japan) (Table 2).

The United States of America occupied the last position in the ranking in both periods, showing just a slight improvement.

From the first to the second time period, all the Mediterranean countries had a decrease in their MAI values, whereas among the Non-Mediterranean countries, there

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Table 2 Ranking of countries by Mediterranean adequacy index (MAI) values in both time periods

	1961–1965		2000–2003	
Countries	Ranking	MAI	Ranking	MAI
Greece	1	5·54	10	2·04
Albania	2	5·07	7	2·51
Turkey	3	5·03	5	2·80
Egypt	4	4·81	1	4·09
Tunisia	5	4·57	6	2·65
Japan	6	4·11	16	1·51
Romania	7	3·89	11	2·02
Libya	8	3·81	9	2·09
Algeria	9	3·61	4	2·81
Portugal	10	3·39	18	1·27
Morocco	11	3·37	3	3·25
Syria	12	3·35	8	2·25
Spain	13	3·35	21	1·19
Italy	14	3·30	15	1·62
Yugoslavia	15	3·13	22	1·15
Iran	16	2·87	2	3·65
Mauritania	17	2·87	13	1·77
Lebanon	18	2·70	14	1·72
Bulgaria	19	2·68	20	1·20
Cyprus	20	2·39	27	0·96
Chile	21	2·24	19	1·27
South Africa	22	1·87	12	1·78
Poland	23	1·84	23	1·12
Israel	24	1·62	24	1·09
Malta	25	1·56	17	1·42
Hungary	26	1·48	37	0·73
France	27	1·28	32	0·82
Argentina	28	1·13	25	0·97
Czechoslovakia	29	1·10	30	0·83
Finland	30	1·04	29	0·87
Austria	31	0·98	38	0·73
Ireland	32	0·97	33	0·80
Norway	33	0·88	26	0·97
Switzerland	34	0·88	39	0·72
Germany	35	0·82	34	0·76
Sweden	36	0·72	31	0·82
Canada	37	0·71	36	0·75
Australia	38	0·68	40	0·70
United Kingdom	39	0·68	28	0·87
Denmark	40	0·67	35	0·76
United States of America	41	0·63	41	0·64

was a decrease in the MAI values in fifteen countries but also improvements in the adherence to the Mediterranean pattern in eight other countries.

Morocco and Malta were the Mediterranean countries that suffered the smallest decreases in MAI, experiencing decreases of 0·12 and 0·14, respectively. France was the third country with the least loss of MAI value (0·46), although it has remained the country with the lowest MAI, last of all the Mediterranean countries.

It is interesting to note that only eight countries, all of which were Non-Mediterranean, increased their adherence to the Mediterranean dietary pattern: four Northern European and four Other World countries (Fig. 3). Iran showed the highest increase in MAI (0·78), improving its place in the ranking from sixteenth to second. The other seven countries had smaller increases, all below 0·2.

All Mediterranean and Central European countries suffered a departure from the MD. Greece was the country with highest MAI (5·54) in the first period and suffered the largest drop, of 3·50 of its MAI value, stepping down from first to tenth place in the ranking.

Discussion

In order to assess how close the diet of several countries in the world was to a Mediterranean-like dietary pattern, the MAI was applied[10,13,16]. As it is computed using the energy provided by foods, it avoids the limitation of differences in energy densities[12–14]. It is based on a very easy to apply ratio between components; the Mediterranean foods (carbohydrate and protective food groups) *v.* the Non-Mediterranean foods (specially foods of animal origin and sweets)[16].

Although MAI has not been validated and has several limitations, it is a useful tool to compare availability trends between different countries[11,18]. The concept of a MD in itself is not consensual and varies in time, therefore influencing the construction of such indexes. As with other dietary indexes, MAI is limited by the decision on which food groups should be considered Mediterranean and what food should be viewed as Non-Mediterranean[6]. Moreover, another limitation of the MAI is that it summarises the MD as a list of products and does not take into account the different proportions of the food items[18]. In addition, the same importance is given to all index components independently of their proportions in the diet and the scientific evidence of diet–disease relationship[17]. Red meat and poultry were not separated, and were included in the broad category of meats[19]. However, seed oils were included in the denominator in order to reduce some limitations of previous studies[12].

Several items, such as eggs and dairy products, were not included in the MAI, partly because the FBS present information on availability of raw food products that do not necessarily fall into the food groups used to construct the MAI. For instance, the availability of milk is presented but not dairy products and the availability of eggs is presented but not the food groups in which it is found, such as cakes and pastries. In addition, evidence on the health benefits of dairy products is controversial[20].

The FBS are inherently limited by the inaccuracy of the underlying data sources (such as data on production, storage, losses and crops)[15,21]. It is also important to highlight the fact that the data provided only gives us an estimate of the energy available for human consumption, which is not equivalent to the energy consumed[21,22]. Indeed, a comparative analysis made by two research groups shows that FBS present an overestimation for food consumption compared to the individual dietary surveys[23,24]. Another limitation of FBS is related to the estimate of per capita availability and therefore the lack of information to be able

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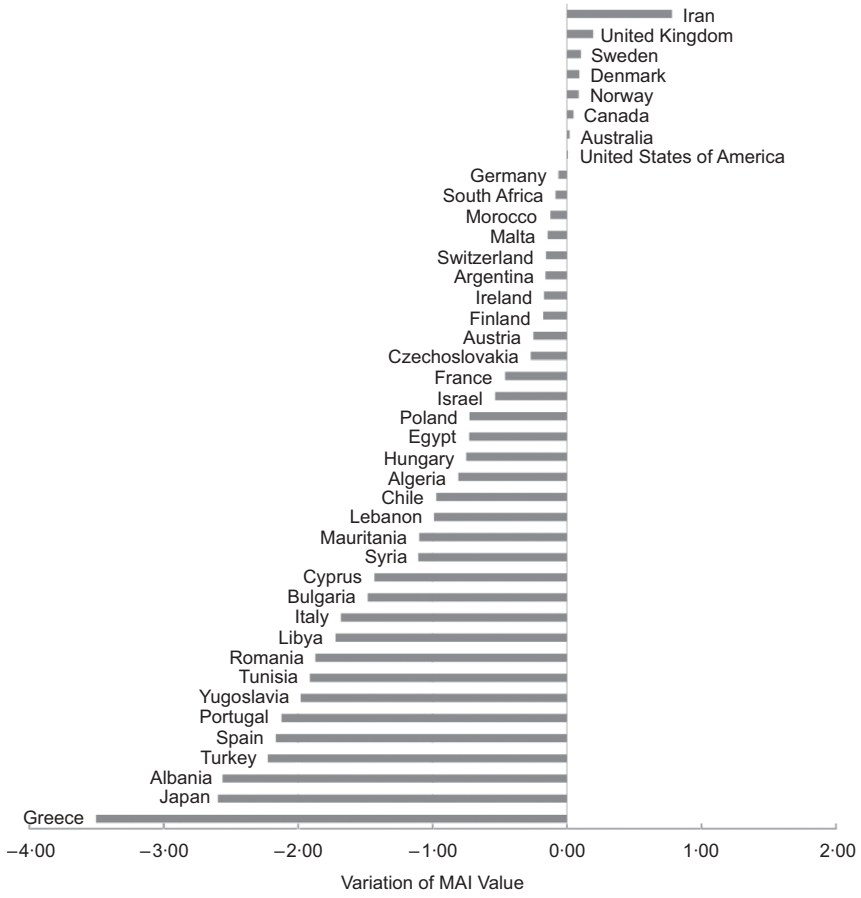

Fig. 3 Variation of Mediterranean adequacy index (MAI) for all countries between the periods of 1961–1965 and 2000–2003

to analyse population subgroups, such as by gender, age and education[21,25]. Furthermore, parameters such as home production and consumption by tourists are not taken into account by the FBS. Despite this, they are a cost-effective tool that allows longitudinal consistent comparisons and are the best source of data, if not the only one, available for the studied period[12,21,26], for the selected countries.

The present study shows that countries from all over the world have drifted away from a Mediterranean-like dietary pattern. It also shows that some countries located outside the Mediterranean basin, such as Japan, Iran and Chile, share some of the characteristics of the MD, a prudent healthy dietary pattern. The changes in adherence to the MD over the last 40 years, varied considerably between the countries (Fig. 3), the Mediterranean countries showing the greatest departure from the MD, as reported previously[22]. In addition, the Mediterranean countries that had the greatest adherence in the 60s, for example Greece, experienced the greatest decreases in MAI values; whereas Mediterranean countries, such as Malta and France, that had the lowest MAI values only had marginal changes (Figs. 1 and 2). Only a few of the selected countries increased their adherence to the Mediterranean dietary pattern, but these were minimal and occurred, in general, in those countries with lowest MAI in the first period.

The fact that the availability of several Mediterranean dietary components has increased or been maintained, such as fruits, vegetables and olive oil[19,27–30], could have led to a greater adherence to the Mediterranean dietary pattern. However, this is not the case, as the availability of the Non-Mediterranean foods has increased to a much greater extent compared to Mediterranean foods[27,28,30].

The upward trend of MAI in Northern Europe was the result of increased availability of Mediterranean food products such as fruits and vegetables[12,30].

The study shows that the MAI values in Mediterranean Europe were higher than the MAI values presented by Northern and Central Europe. As observed in other studies[21,31], Northern Europe tends to have slightly higher MAI values nowadays than in the early 1960s, although this change was not statistically significant. The trends in MAI values are similar to those reported in the study by Balanza *et al.* which covers similar areas to those covered in the present study (although it considers Central Europe as Eastern Europe)[12]. However, caution should be taken when making comparisons between studies using different variations of an index (i.e. differences in food groups included in our study and in Balanza's)[12].

There is a general deviation from the Mediterranean dietary pattern by the Mediterranean countries (Fig. 2),

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which has also been documented in previous studies[2,28,32]. Throughout the four decades considered in this study, the Mediterranean countries moved away from the Mediterranean dietary pattern in the order of 42·5 %. Within the Mediterranean area, the European countries were primarily responsible for this loss of adherence. In both periods, the Other Mediterranean countries have the highest adherence to the MD, as cited before[32], and the differences between mean MAI values in Other Mediterranean countries and in Mediterranean Europe has widened over time. Mediterranean countries are suffering a process of westernisation, with changes in cultural, social and political factors, which are likely to have a heavy influence on changes in food habits[2,28]. Compared to the first time period, Mediterranean products are now providing less energy to the diet, whereas Non-Mediterranean foods are providing much more energy to the diet[19,30].

Among the Mediterranean countries, Greece suffered the largest decrease in the MAI value since the 1960s. This distancing from the Mediterranean dietary pattern is mainly due to the increase in energy available from the Non-Mediterranean food group, which almost tripled. In contrast, the energy available from the Mediterranean food group was almost the same in both time periods. The greatest increases occurred in the meat, sugar and sweeteners groups and in most vegetable oils (excluding olive oil), with highest increase in sunflower and corn germ oils (data not shown), as reported previously[31].

In contrast, countries such as France and Malta, which ranked very low in the 1960s, have experienced very small changes. In relation to Malta, the migratory movements may have influenced these changes and the current low MD adherence observed, as shown by Tessier and Gerber [33]. As for France, this may be due to the fact that it is a large country with considerable geographic, climatic, agricultural and food habit variations between regions[34]. Furthermore, only a small part of France is in contact with the Mediterranean Sea. These factors may explain why the mean MAI value in France is similar to that found in Central and Northern European countries[35]. In previous studies[28,31], the gross national product (GNP) seemed to be inversely related to the degree of adherence to the Mediterranean pattern, and France had the highest value of GNP and the lowest MAI among the Mediterranean countries[21].

Egypt, one of the Other Mediterranean countries, stands out as having the highest MAI of all the countries studied, meaning that it is the country that best adheres to the Mediterranean-like dietary pattern. Moreover, other research has shown that Egypt has the closest compliance to dietary recommendations such as those from the Diabetes and Nutrition Study Group and WHO[2,19]. Egypt's high Mediterranean adherence could be indirectly associated with its low GNP[31], and the influence it has on the type of foods available.

All Central European countries experienced a decrease in MD adherence, and currently have an intermediate ranking. The mean MAI value of Central Europe is now close to 1·00, which indicates that the balance between Mediterranean and Non-Mediterranean food products is similar. Romania and Bulgaria experienced the greatest decreases in adherence within the Central Non-Mediterranean

European countries, similar in magnitude to decreases experienced in the Mediterranean countries. Food patterns of these countries have been shown to share some characteristics with the Mediterranean dietary pattern[36]. Furthermore, some studies actually consider them as being Mediterranean because of the impact of the similarities of the Black Sea and the Mediterranean Sea[2,36].

Northern European countries had the lowest adherence to the MD and the MAI values have hardly changed over the last 40 years, although there are a few exceptions[37]. The MAI values in the two time periods are less than 1·00, indicating that the Non-Mediterranean products contribute more to the diet than the Mediterranean products.

The Other World countries are a very heterogeneous group in terms of current adherence and changes since the 1960s, as they represent a very broad category, including countries in North and South America, Asia and Africa. For instance, Iran had the largest increase in MAI value and became the country with the second highest adherence to the Mediterranean dietary pattern. Iran also registered a large increase in energy availability since 1961, however, the increase in energy supplied by Mediterranean food was much greater than that supplied by Non-Mediterranean foods. The greater availability of fruits and vegetables, cereals, nuts and fish has probably contributed to the increase in MAI (data not shown).

Australia is one of the countries that suffered a very slight rise in MAI value, caused by the increase of energy available from Mediterranean foods and the maintenance of the energy supplied by the Non-Mediterranean food (data not shown), which could be due to the presence of people migrating from Mediterranean countries[25,38].

The dietary pattern in Japan, as with Iran, shares many common features with the Mediterranean dietary pattern, such as a high consumption of cereals, vegetables, fruit and fish[13]. Even though the dominant Japanese grain (cereal) is rice and in the Mediterranean basin it is wheat[39], the similarities with the standard MD are mirrored in the MAI value presented by Japan in both periods. As with Mediterranean countries, Japan has also become more westernised, which is reflected, among other things, in the diet of the population and the quantity and type of products consumed[39–41]. Although the total available energy for Japan did not vary substantially, the energy supplied by Non-Mediterranean food has doubled. This increase of available energy was essentially due to meat and vegetable fats (except olive oil) (data not shown).

The worldwide MAI values, calculated with the FAO data from the World area, grouping 169 countries and territories, presents higher values of adherence to a Mediterranean-like food pattern, in both studied time periods, than the group of the forty-one All Selected countries. It is therefore possible to conclude that there are countries with high MAI values that were not included in the study, which explain these differences.

Given that countries are, in general, decreasing their adherence to the Mediterranean dietary pattern, governments and non-governmental organisations need to promote health and agricultural policy strategies[21] to counteract the continued dietary westernisation of these countries[4,28,42]. This is especially relevant considering that there is now ample scientific evidence showing that the Mediterranean-like dietary pattern is a healthy prudent dietary pattern associated with a lower chronic disease risk in comparison to a more westernised pattern, with higher contribution in animal products and sugars[43,44]. These policies should take into account the inevitable development and globalisation that all countries are subject to nowadays, and must be adapted to the current recommendations aiming to improve health and well-being[45,46].

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