sustainability

MDPI

Article

Do Consumers Adhere to a Sustainable Mediterranean Food Pattern? An Analysis of Southern Italian Consumer Practices

Debora Scarpato [1], Gennaro Civero [1,*] and Mariarosaria Simeone [2]

[1] Department of Economic and Legal Studies, University of Naples Parthenope, 80133 Naples, Italy; debora.scarpato@uniparthenope.it
[2] Department of Political Science, University of Naples Federico II, 80138 Napoli, Italy; mariarosaria.simeone@unina.it
* Correspondence: gennaro.civero@collaboratore.uniparthenope.it

Abstract: The Mediterranean diet (MD) concept has evolved in recent decades, moving from the perception of a healthy diet model to the awareness that it is also a sustainable food model. This dietary model, in fact, brings benefits in terms of nutrition, health, and maintenance of local traditions and food culture, but it also has a better impact in terms of the emission of greenhouse gasses, water and land use, energy consumption, and environment contamination. The aim of this study is to analyze the knowledge of and the adherence to the Mediterranean diet in a sample of adults in southern Italy during 2022, as well as their orientation towards the social dimension of sustainability (in terms of human health and animal welfare) and towards environmental sustainability. To collect information, a questionnaire was prepared for a population of 570 Italian consumers. Using the data from the questionnaires, a multivariate analysis was developed by performing a principal component analysis and a cluster analysis. The results of the empirical analysis proposed by the present study confirm the fact that the analyzed sample lacks adequate knowledge of the MD and, as a result, does not satisfactorily adhere to a healthier lifestyle marked by the criteria of this diet. Most of the clusters derived from the empirical analysis demonstrate low-to-moderate adherence to the MD. There is a need to generate renewed interest in the general population in a sustainable dietary pattern that provides nutritional, environmental, and social benefits. This requires effective health promotion and national interventions to promote the health benefits of the MD.

Keywords: Mediterranean diet; sustainable diet; sustainability; environmental sustainability; food consumption

Citation: Scarpato, D.; Civero, G.; Simeone, M. Do Consumers Adhere to a Sustainable Mediterranean Food Pattern? An Analysis of Southern Italian Consumer Practices. *Sustainability* **2023**, *15*, 13460. https://doi.org/10.3390/su151813460

Academic Editor: Michael S. Carolan

Received: 11 August 2023
Revised: 1 September 2023
Accepted: 5 September 2023
Published: 8 September 2023

1. Introduction

The Mediterranean region, with its several food consumption and production patterns, is in continuous evolution representing the particular historical and environmental mosaic that is the Mediterranean. In fact, the Mediterranean diet represents the plurality of various cultural expressions of different Mediterranean food cultures and lifestyles [1].

The Mediterranean diet (MD) eating pattern was declared an Intangible Cultural Heritage of Humanity by UNESCO in 2010 by the United Nations Educational, Scientific and Cultural Organization. This international recognition has increased the visibility and acceptance of the MD, providing more scientific evidence regarding its benefits and effects on longevity, disease prevention, and quality of life (UNESCO, 2023).

According to various literature reviews, the Mediterranean diet is associated with better health and the prevention of chronic diseases [2]. In particular, this diet has been associated with a reduced risk of cardiovascular diseases [3,4].

Very often, the efforts made by a person with type 2 diabetes to improve his or her health are at risk of being thwarted if a high percentage of the foods consumed are packaged and full of additives.

The way foods are processed is as important as their nutritional content.

In this context, nutrition labels on the front of the package should also include information about how the food was processed, and not only for people with diabetes [5].

In addition, in various studies, the MD has been associated with a lower risk of cancer together with a lower risk of cancer mortality, and thus more cancer survivors [6,7].

The Mediterranean diet model, according to Milenkovic T. et al. (2021) [8], is also related to better blood pressure levels and better control of glycemic indexes, inflammatory markers, and lipid panel. This determines a better management of type II diabetes and improves the control of cardiovascular risk factors. Greater adherence to a Mediterranean dietary pattern increases with greater nutritional knowledge. The probability of being obese significantly decreases with increasing levels of nutrition knowledge.

Recent studies have also shown that adherence to the Mediterranean diet is associated with better cognitive status and fewer depressive symptoms [9].

In recent decades, a fundamental issue has been to include sustainability objectives in dietary guides with the aim of making food not only healthy, but also sustainable for the environment. The debate has become more active since the publication of the first sustainability dietary guidelines in 1986.

Several studies have shown that the environmental impact of the Mediterranean diet is lower than other food models due to its characteristic of being a diet with a low consumption of animal products and more plant-based products. This implies a smaller water footprint and lower greenhouse gas emissions [5]. In particular, the Mediterranean diet requires the consumption of a wide choice of cereals, fruit and vegetables, and not only cultivated products but also wild species. Therefore, it is important to highlight that the promotion of the Mediterranean diet represents a strategic element for the conservation of the richness of the biological diversity of the region. To this we must add the importance attributed to the consumption of seasonal fresh and local products, biodiversity, and the variety of foods (especially fruit and vegetables available). Together with traditional culinary activities, conviviality, and frugality, they form the basis of the heritage conservation of the Mediterranean diet. Following Capone et al. (2013) [10], the adherence of the Italian population to the Mediterranean dietary pattern can promote significant health benefits and also reduce the food environmental footprint on natural resources, especially water consumption.

It is very important to think of the Mediterranean diet as a historical socio-cultural heritage, closely linked to the lifestyles of the Mediterranean peoples throughout their history. In fact, the Mediterranean diet expresses the diversity of Mediterranean food cultures. The Mediterranean local food system under the term Mediterranean diet encourages local production and local consumption, thus encouraging sustainability.

The longevity associated with the Mediterranean diet could be partly attributed to the traditional Mediterranean foods which this diet incorporates. Traditional foods are an integral part of the Mediterranean diet and contribute to the conservation and development of traditional activities and crafts, thereby guaranteeing the balance between the territory and people [2]. For this reason, it is very important to promote the valorization of local food products and to protect the traditional and typical Mediterranean food products through geographic labeling, quality standards, and product origin identification. The strategy should aim to combine tradition, sustainability, and innovation [11].

Therefore, the Mediterranean diet impacts on all dimensions of sustainability, positively affecting nutrition and health, environment, local economy, society, and culture. Many questions still need to be addressed to the sociocultural and economic evaluations of the Mediterranean diet. However, it is necessary to rethink the Mediterranean diet as a sustainable diet model within the framework of the Mediterranean sustainable food system for the present and future Mediterranean generations [1].

According to Biasini B. et al. (2021) [12], in the last few decades, the Mediterranean populations have been stepping away from their traditional dietary patterns, such as the MD. The main causes of this are to be attributed to globalization, population growth,

urbanization, and lifestyle changes, together with economic and sociocultural factors. The problem is that these food systems and food consumption pattern transformations are contributing to the loss of biodiversity and soil degradation, and they also represent significant challenges for the state of food security and nutrition.

Based on these considerations, the aim of the present study was to investigate the knowledge and adherence to the Mediterranean diet, the orientation towards the social dimension of sustainability (in terms of human health and animal welfare), and environmental sustainability in a sample of Southern Italian adults.

Although there are many scientific studies investigating the health benefits of the Mediterranean diet for people, there is not always an analysis of consumers' orientation toward sustainable foods. The present study aims to focus on this aspect in particular.

In particular, our study posed the following research questions:

RQ1: What are the main motivations of consumers in following a diet?
RQ2: Do consumers have a wide knowledge of the benefits of the Mediterranean diet?
RQ3: Do consumers follow a Mediterranean diet?
RQ4: Are consumers orientated towards sustainable foods?

2. Materials and Methods

To collect information, a questionnaire was prepared for a population of 570 Italian consumers residing in southern Italy, specifically in the Campania region. The research sample was self-selected, and the interviews were conducted face-to-face during 2022. It was an exploratory study without inferential objectives. The questionnaire was administered through a non-probabilistic reasoned-choice sample. The final questionnaire consisted of multiple-choice questions, from 42 items divided into several sections and measured on a Likert scale of 1 to 5 points [13].

1. The first part investigated the motivation of consumers to follow a diet;
2. The second investigated the tendency to consume sustainable foods and with what frequency;
3. In addition, greater willingness to buy products that follow the attributes of the Mediterranean diet was analyzed;
4. Finally, the importance of purchasing a product with sustainable attributes was analyzed.

Using the data from the questionnaires, a multivariate analysis was developed by performing a principal component analysis and a cluster analysis using SPSS statistical software. Principal component analysis (PCA) was used to reduce dimensionality by narrowing the number of quantitative variables into a smaller set of factors or principal components (PCs).

To arrive at the selection of the 13 key components at the statistical level, it must be stated that the community values explain the amount of variance of each variable explained by the extracted factors, and these values, being always greater than or equal to 50 percent of the initial variance, show that the variables are well represented by the factors.

After identifying the key components (using PCA analysis), an ideal partition of 5 clusters was identified, analyzed, and discussed. The authors declare the ethical correctness of the manuscript and that it meets the industry-recognized standards, as reflected in MDPI's policies. In this study, all participants were fully informed of why the research was being conducted, how their data would be used, and if there were any associated risks, as well as being assured of their anonymity.

3. Results

Table 1 highlights the socio-demographic characteristics of the sample. The respondents who participated in this study were mostly single, employed men (69.12%), aged between 25 and 40, with a high school diploma and a net monthly income between EUR 1001 and EUR 1500. The knowledge and application of the principles of the Mediterranean

diet by the surveyed sample are influenced by several variables. Therefore, the use of principal component analysis provides an overall clearer and more immediate interpretation.

Table 1. Socio-demographic variables of the sample.

Attributes	No. Consumers	Percentage of Sample
Males	394	69.12
Females	176	30.88
15–25	202	35.49
25–40	286	50.18
40–55	60	10.53
55–70	22	3.86
Single/bachelor	440	77.19
Separated/divorced	8	1.40
Married	122	21.40
Degree	220	38.60
Secondary school certificate	10	1.75
Diploma	294	51.58
Postgraduate	42	7.37
Housewife	44	7.72
Manager	6	1.05
Freelance engineer/teacher	10	1.75
Self-employed	30	5.26
Employed	182	31.93
Freelancer	70	12.28
Retired	14	2.46
Student	210	36.84
X $\leq$ EUR 1000	64	11.23
EUR 1001 < X $\leq$ EUR 1.500	128	22.46
EUR 1.501 < X $\leq$ EUR 2.000	122	21.40
EUR 2.001 < X $\leq$ EUR 3.000	110	19.30
EUR 3.001 < X $\leq$ EUR 4.000	50	8.77
EUR 4.001 < X $\leq$ EUR 6.500	46	8.07
X > EUR 6.501	50	8.77

Specifically, the identified components can be interpreted as follows:

- Sustainable purchasing, which describes how, when purchasing products, importance is given to certifications, environmental protection, organic production, etc.
- Frequency of Mediterranean diet food consumption, which describes the frequency of the consumption of healthy foods such as fish, legumes, fruits, vegetables, etc.
- Sustainable motivations, which include sustainable motivations for respondents to follow a diet such as environmental protection or animal welfare.
- Pathological motivations, which include the health motivations that drive respondents to follow a diet, for example, diabetes, celiac disease, etc.
- Knowledge of Mediterranean diet, which describes the knowledge of the Mediterranean diet and the focus on the cardiovascular and immune system.

- Frequency of non-Mediterranean diet food consumption, describing the consumption of unhealthy foods such as sweets, junk food, snacks, etc.
- Traditional purchasing: this component describes the importance of traditional factors, such as the advice of the salesperson, etc., in purchasing a food product.
- Frequency of unsustainable diet food consumption, which describes unsustainable food consumption such as red meat, sausages, etc.
- Frequency of sustainable diet food consumption: this component describes the consumption of healthier foods such as white meat, eggs, etc.
- Sport activities, which describe practicing a sport and caring for muscle mass.
- Frequency of alcohol consumption, which describes the (unhealthy) consumption of alcohol.
- Weight loss motivation, which describes the importance of weight loss among the motivations for dieting.
- Willingness to pay, which describes respondents' willingness to pay for Mediterranean diet foods.

The choice of the number of components occurs by considering three joint criteria: values of community, the amount of cumulative variance explained by the factors, and the Eigenvalues of the components.

Cluster Analysis

In this empirical survey, the ideal solution is a five-cluster partition, and Table 2 presents the final cluster centers. Having identified the key components that influence the sensitization of the interviewees to the topics analyzed, the aim of a cluster analysis was to segment the statistical units.

Table 2. The final cluster centers.

	Cluster				
	1	**2**	**3**	**4**	**5**
Sustainable purchasing	−0.106	0.088	−0.027	−0.086	0.250
Frequency Mediterranean diet food consumption	0.060	−0.267	−0.307	0.593	−0.009
Sustainable motivations	0.538	0.424	−0.163	−0.603	0.115
Pathologies motivations	−0.294	2.694	−0.296	0.299	−0.453
Knowledge of Mediterranean diet	−0.674	−0.015	−0.142	0.117	1.042
Frequency non-Mediterranean diet food consumption	0.879	−0.196	−0.556	0.230	−0.210
Traditional purchasing	−0.079	0.434	0.255	−0.837	0.339
Frequency unsustainable diet food consumption	0.359	−0.180	−0.639	0.198	0.664
Frequency sustainable diet food consumption	0.009	0.143	0.052	0.369	−0.581
Sport activities	0.001	0.216	−0.299	0.044	0.462
Frequency alcoholic consumption	0.136	0.088	−0.046	−0.313	0.224
Weight loss motivation	−0.480	−0.350	0.164	0.602	−0.223
willingness to pay	0.088	0.158	0.056	−0.203	−0.067

Note: Values close to 1 or higher indicate that the specific component represents that group of clusters. Extremely negative values indicate that the specific component has little or no representation in that cluster group. Source: Authors' elaboration of data from survey.

The clusters can be described as follows:

- Cluster 1 (very low adherence to the Mediterranean diet, good sustainable motivation, but low sustainable behavior): they are induced to follow a diet for environmental protection and animal welfare reasons but, when they buy a product, no importance is given to certifications (environmental protection, organic, etc.). They show little

tendency to consume foods that are not sustainable and not indicated in the Mediterranean diet, such as sweets, snacks, or junk food. They have no knowledge of the benefits of the Mediterranean diet and do not need to lose weight. Also, when purchasing, they do not give importance to traditional factors such as the seller's advice. They participate little in sports, drink little alcohol, and are only minimally willing to pay more for a healthy diet. This cluster consists of 128 units.

- Cluster 2 (not adhering to the Mediterranean diet, very healthy, and moderately sustainable consumers): They are very orientated towards following the diet for health reasons, mainly for illnesses such as diabetes and celiac disease, and they give moderate importance to sustainable motivations such as environmental protection, animal welfare, and traditional attributes. They buy healthy foods but do not know the health benefits of the Mediterranean diet and therefore do not consume related foods. They practice sports, and their willingness to pay for healthy foods is positive, although not yet satisfactory. They do not need to lose weight and do not consume junk food. It is the least numerous clusters, with 40 units.
- Cluster 3 (not adhering to the Mediterranean diet, unhealthy, and unsustainable): They have little interest in following a diet to lose weight, but they avoid unhealthy foods such as sweets, snacks, or unsustainable foods; they do not know about the Mediterranean diet and consequently do not consume related foods. When they buy a product, they pay little attention to traditional attributes such as the seller's advice and do not care about sustainable attributes, such as the presence of certifications, environmental protection, or organic production. They do not devote themselves excessively to the consumption of red meat and sausages, they do not consume alcohol, and neither do they play sports. Their willingness to pay more for a healthy diet is at a minimal level. They are the most numerous, with 196 units.
- Cluster 4 (good adherence to the Mediterranean diet, quite healthy, but unsustainable): They widely consume Mediterranean products such as fish, legumes, fruits, and vegetables but have little knowledge of the benefits of this diet. They are very interested in following a diet to lose weight, but they have little interest for reasons related to diseases such as diabetes. When buying a product or following a diet, they do not give importance to sustainable attributes such as the presence of certifications, environmental protection, organic production, and traditional attributes. They are not willing to pay more for a healthier product, they play little sport, and do not consume alcohol. This cluster consists of 108 units.
- Cluster 5 (good knowledge of Mediterranean Diet, but not adhering. Slightly sustainable): They claim to have a good understanding of the Mediterranean diet, but do not follow it. They have little motivation to follow a diet for sustainable reasons and pay little importance to sustainable and traditional purchasing. They consume unsustainable diet foods such as red meat and sausages. They are not willing to pay more for healthy foods. They play sports moderately and drink a little alcohol. This cluster consists of 98 units.

The ANOVA table (Table 3) shows us which components were most involved in defining the clusters. Specifically, these are pathology motivations, knowledge of Mediterranean diet, and frequency of non-Mediterranean diet food consumption. These are followed by frequency of unsustainable diet food consumption, traditional purchasing, and weight loss motivations. However, willingness to pay and sustainable purchasing are the least influential in the division of the groups.

Table 3. ANOVA test.

ANOVA						
	Cluster		Error		F	Sig.
	Mean Square	Df	Mean Square	Df		
Sustainable purchasing	2.206	4	0.991	565	2.225	0.065
Frequency Mediterranean diet food consumption	14.962	4	0.901	565	16.604	0.000
Sustainable motivations	22.498	4	0.848	565	26.537	0.000
Pathologies motivations	87.055	4	0.391	565	222.786	0.000
Knowledge of Mediterranean diet	42.525	4	0.706	565	60.232	0.000
Frequency non-Mediterranean diet food consumption	42.743	4	0.704	565	60.673	0.000
Traditional purchasing	27.011	4	0.816	565	33.107	0.000
Frequency unsustainable diet food consumption	36.305	4	0.750	565	48.404	0.000
Frequency sustainable diet food consumption	12.298	4	0.920	565	13.367	0.000
Sport activities	10.130	4	0.935	565	10.830	0.000
Frequency alcoholic consumption	4.657	4	0.974	565	4.781	0.001
Weight loss motivations	20.912	4	0.859	565	24.344	0.000
Willingness to pay	1.878	4	0.994	565	1.890	0.111

The composition of the individual cluster groups is highlighted in Tables 4 and 5.

Cluster 1 consists of 128 units, or 22.46 percent of the sample, and includes mainly single men between the ages of 15 and 25, primarily students, with an education level of high school diploma. In this cluster, the weekly budget for food shopping is between EUR 51 and 100.

Cluster 2 is the least numerous with just 40 units (7.02%), with the same number of men as women. In this cluster, the average age is raised by including people between the ages of 25 and 40. Again, these are single, high school graduates and mostly self-employed (26 units or 65 percent of the sample). Monthly income is significantly higher, ranging from EUR 3000 to 4000, and the weekly food budget is higher than that of cluster 1, ranging from EUR 101 to 150.

Cluster 3 is the largest cluster with 196 (34.39 percent) and is predominantly made up of single men. These are office workers (86 units) with a high school diploma, and they represent 43.88 percent of the surveyed sample. They are mostly in the age group of 25 to 40 and have a weekly budget for food shopping between EUR 51 and 100. Finally, their monthly income of between EUR 1001 and 1500 is significantly lower than in cluster 2.

Cluster 4 includes 108 units (18.95 percent), again predominantly single men between the age of 25 and 40. In this cluster, the level of education is slightly higher because as many as 46.30 percent (or 50 units) have a bachelor's degree. Despite this, only 42.59 percent are employed with a monthly income between EUR 1501 and 2000, which is higher than in cluster 3, and a weekly food budget between EUR 51 and 100.

In conclusion, cluster 5 is characterized by 98 units and consists mainly of single, college-graduate men (the latter figure shows a percentage of 42.9) aged from 25 to 40 with a weekly budget for food shopping between EUR 101 and 150. In total, 42.9 percent have a job as clerks and, despite the high level of education of the cluster, the monthly income in this group hovers below EUR 1000, the lowest compared to all other clusters.

Table 4. Composition of cluster groups.

	Cl. I		**Cl. II**		**Cl. III**	
	128 Units (22.46%)		**40 Units (7.02%)**		**196 Units (34.39%)**	
	Absolute Value	**Percentage Value**	**Absolute Value**	**Percentage Value**	**Absolute Value**	**Percentage Value**
Male	96	75.0	20	50.00	142	72.45
Female	32	25.0	20	50.00	54	27.55
15–25	78	60.9	10	25.00	60	30.61
25–40	48	37.5	24	60.00	100	51.02
40–55	0	0	6	15.00	26	13.27
55–70	2	1.6	0	0.00	10	5.10
Single/bachelor	114	89.1	30	75.00	138	70.41
Separated/divorced	0	0.0	0	0.00	2	1.02
Married	14	10.9	10	25.00	56	28.57
Degree	42	32.8	14	35.00	72	36.73
Secondary school certificate	2	1.6	0	0.00	6	3.06
Diploma	80	62.5	22	55.00	104	53.06
Postgraduate	4	3.1	4	10.00	14	7.14
Housewife	2	1.6	0	0.00	28	14.20
Manager	4	3.1	0	0.00	0	0.00
Freelance engineer/teacher	6	4.8	0	0.00	0	0.00
Self-employed	10	7.8	0	0.00	10	5.10
Employed	4	3.1	4	10.00	86	43.88
Freelancer	28	21.9	26	65.00	8	4.10
Retired	6	4.7	0	0.00	4	2.04
Student	68	53.2	8	20.00	58	29.60
X < EUR 1.000	4	3.1	4	10.00	20	10.20
EUR 1.001 < X < EUR 1.500	28	21.9	6	15.00	48	24.49
EUR 1.501 < X < EUR 2.000	34	26.6	4	10.00	36	18.37
EUR 2.501 < X < EUR 3.000	40	31.3	4	10.00	38	19.39
EUR 3.001 < X < EUR 4.000	6	4.7	14	35.00	18	9.18
EUR 4.001 < X < EUR 6.500	10	7.8	4	10.00	14	7.14
X > EUR 6.501	6	4.7	4	10.00	22	11.22

Table 5. Composition of cluster groups.

	Cl. IV		**Cl. V**	
	108 Units (18.95%)		**98 Units (17.19%)**	
	Absolute Value	**Percentage Value**	**Absolute Value**	**Percentage Value**
Male	72	66.67	64	65.3
Female	36	33.33	34	34.7
15–25	36	33.33	18	18.4
25–40	50	46.30	64	65.3

Table 5. *Cont.*

	Cl. IV		**Cl. V**	
	108 Units (18.95%)		**98 Units (17.19%)**	
	Absolute Value	**Percentage Value**	**Absolute Value**	**Percentage Value**
40–55	18	16.67	10	10.2
55–70	4	3.70	6	6.1
Single/bachelor	78	72.22	80	81.6
Separated/divorced	4	3.70	2	2.0
Married	26	24.07	16	16.3
Degree	50	46.30	42	42.9
Secondary school certificate	0	0.00	2	2.0
Diploma	50	46.30	38	38.8
Postgraduate	8	7.41	12	12.2
Housewife	10	9.30	4	4.1
Manager	0	0.00	2	2.0
Freelance engineer/teacher	2	1.85	2	2.0
Self-employed	2	1.85	8	8.2
Employed	46	42.59	42	42.9
Freelancer	2	1.85	6	6.1
Retired	2	1.85	2	2.0
Student	44	40.80	32	32.7
X < EUR 1.000	12	11.11	24	24.5
EUR 1.001 < X < EUR 1.500	24	22.22	22	22.4
EUR 1.501 < X < EUR 2.000	28	25.93	20	20.4
EUR 2.501 < X < EUR 3.000	24	22.22	4	4.1
EUR 3.001 < X < EUR 4.000	6	5.56	6	6.1
EUR 4.001 < X < EUR 6.500	6	5.56	12	12.2
X > EUR 6.501	8	7.41	10	10.2

4. Discussion

In accordance with the study by Obeid et al., 2022 [3], the results of the empirical analysis proposed in the present study confirm the fact that while the Mediterranean diet is promoted in non-Mediterranean countries, the people in Mediterranean countries seem to lack adequate knowledge about it. This circumstance does not encourage consumers to adhere to a healthier lifestyle marked by the MD criteria [14].

Specifically, in accordance with the study by Garcia Gonzales et al., 2020 [15], consumer perceptions of the sustainability of the MD and the adherence to the MD itself can be reasonably based on consumers' awareness of their own dietary behaviors. We need to be aware of their knowledge of food and environmental sustainability issues and the relevance of the MD in terms of sustainability, concepts which are largely misunderstood by the general population.

In our study, most clusters derived through the empirical analysis demonstrate a low-to-moderate adherence to the MD in the survey sample, consisting mainly of men. In agreement with the study by Aridi et al., 2020 [16], it is possible to state that men, compared to women, tended to less likely inform themselves about the benefits of such a diet and to conform to its guidelines.

The most virtuous cluster, group 4, that best adheres to the Mediterranean diet, showed that the age group ranging from 25 to 40 is the group most likely to follow the standards of the MD. This statement is also confirmed by the study of Veronese et al., 2020 [17], in which a significant decrease in adherence to the MD in Italy (particularly in the South) is more evident in the age group, ranging from 25 to 40 among older ones.

There is a correlation between MD adherence and employment occupation of different cluster groups. In fact, these findings have been observed by comparing cluster 1 and cluster 4 of the present work [12].

In cluster 1, the least virtuous, most of the sample is represented by students, while in cluster 4, there are mostly white-collar workers. This demonstrates the fact that young people once again represent the segment which needs to be informed about this issue, in accordance with the findings of Milenkovic et al., 2021 [8].

According to study of Kyriacou et al., 2015 [18], to clarify the reasons behind MD adherence levels, a variety of variables such as age, gender, and socio-economic and educational status were highlighted. In cluster 1, which is particularly numerous, adherence to the Mediterranean diet does not follow a satisfactory level, and in this group we find mainly single people with a high school diploma. On the contrary, cluster 4 is the most virtuous from the point of view of the knowledge of the MD and of the adherence to this diet, and this is especially prevalent in people with degrees. This indicates that the level of education is an important discriminant in this type of analysis [19]. The present work reiterates that there has been a lower adherence to the MD among the elderly due to their level of education and lifestyle, a finding which is in agreement with the study conducted by Foscolou et al., 2018 [20].

Sustainability in its economic, social, and environmental dimensions has increasingly proven to be at the center of international debates over the years [21,22]. The need, therefore, arises for the adoption of sustainable behavior and a positive attitude towards food sustainability.

Not considering the MD as a sustainable diet could be a serious mistake, and in agreement with Caparello et al., 2019 [23], MD adherence trends should be more consistent, especially in Southern Italy, given that it is one of the cradles of the MD.

Our results reflect the effects of globalization, which has changed the eating habits of people living in the Mediterranean towards the consumption of foods that traditionally characterize non-Mediterranean countries, in accordance with the findings of Dinu et al., 2020 [24].

Previous studies have shown an association between the adoption of an environmentally sustainable diet and adherence to the MD [12]. This association tends to be based on consumers' awareness of their eating behaviors, and their knowledge of food and environmental sustainability issues [25,26]. Through our empirical analysis, however, knowledge and adherence to these concepts does not appear to be at an entirely satisfactory level. Particularly in cluster 1 and cluster 2, adherence to the sustainable motivations does follow a satisfactory level. In this group, we find, above all, freelance people with a high school diploma. On the contrary, in cluster 4, the less virtuous but most numerous people, from the point of view of sustainable motivations, are employed people.

This study suggests that the eating behavior of Italian adults must necessarily change in order to meet nutritional and environmental guidelines, as expressed by adherence to the MD [27–29], in accordance to Abrahamse (2020) [30]. An increase in consumer awareness of the environmental impact of food choices is called for.

5. Conclusions

There is a need to generate a renewed interest in the general population towards a sustainable dietary pattern that can provide nutritional, environmental, and social benefits.

The purpose of this study was to highlight the knowledge of and adherence to the MD in the general adult population residing in Southern Italy. Reasons for the surveyed

sample to follow a diet include health problems related to diseases such as diabetes, but also for reasons related to environmental sustainability.

Using the ACP method and cluster analysis, it was possible to highlight the unsatisfactory adherence to the Mediterranean diet of the sample group in our study. It is essential to promote this adhesion for the prevention of various cardiovascular diseases and diabetes, amongst others.

Our study shows that it is crucial to improve knowledge of and adherence to the MD among young and old people, especially by raising awareness among people with lower levels of education.

This calls for effective health promotion and targeted national interventions aimed at promoting all the sustainable benefits of the MD, and especially conveying the idea that adherence to the MD can have great positive effects on people's lifestyles. This will also improve consumer orientation towards more sustainable foods. Finally, public campaigns should focus on the link between diet and environment to promote nutritionally appropriate and environmentally friendly eating behaviors.

However, there are some limitations within our study. Firstly, the research was restricted to southern Italy; consequently, a future study could consider a wider geographical area with a larger sample.

Other limitations of the study are that we did not investigate important variables related to health and habits (e.g., body weight, smoking). Furthermore, data on adherence to the Mediterranean diet and sustainability were recorded by questionnaires; therefore, they were prone to the inherent limitations of self-reported data, such as memory bias, misunderstanding, or misclassification.

It could also be interesting to analyze consumer orientation towards foods that satisfy all dimensions of sustainability (economic, social, and environmental).

Author Contributions: Conceptualization, D.S., G.C. and M.S.; Methodology, D.S., G.C. and M.S.; Software, G.C.; Formal analysis, G.C.; Investigation, D.S. and M.S.; Data curation, D.S. and M.S.; Validation D.S., G.C. and M.S.; writing—original draft preparation, D.S., G.C. and M.S.; writing—review and editing, D.S., G.C. and M.S. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Dernini, S.; Berry, E.; Serra-Majem, L.; La Vecchia, C.; Capone, R.; Medina, F.X.; Aranceta-Bartrina, J.; Belahsen, R.; Burlingame, B.; Calabrese, G.; et al. Med Diet 4.0: The Mediterranean diet with four sustainable benefits. *Public Health Nutr.* **2016**, *20*, 1322–1330. [CrossRef]
2. Benhammou, S.; Heras-González, L.; Ibáñez-Peinado, D.; Barceló, C.; Hamdan, M.; Rivas, A.; Mariscal-Arcas, M.; Olea-Serrano, F.; Monteagudo, C. Comparison of Mediterranean diet compliance between European and non-European populations in the Mediterranean basin. *Appetite* **2016**, *107*, 521–526. [CrossRef] [PubMed]
3. Obeid, C.A.; Gubbels, J.S.; Jaalouk, D.; Kremers, S.P.; Oenema, A. Adherence to the Mediterranean diet among adults in Mediterranean countries: A systematic literature review. *Eur. J. Nutr.* **2022**, *61*, 3327–3344. [CrossRef] [PubMed]
4. Pascual, V.; Martinez, P.; Fernandez, J.; Solá, R.; Pallarés, V.; Anny Romero Secín, A.R.; Pérez Jiménez, F. Emilio Ros E SEA/SEMERGEN consensus document—Dietary recommendations in the prevention of cardiovascular disease. *Clin. Res. Arter.* **2019**, *31*, 186–201. [CrossRef]
5. Bonaccio, M.; Di Castelnuovo, A.; Costanzo, S.; De Curtis, A.; Persichillo, M.; Sofi, F.; Cerletti, C.; Donati, M.B.; de Gaetano, G.; Iacoviello, L. Ultra-processed food consumption is associated with increased risk of all-cause and cardiovascular mortality in the Moli-sani Study. *Am. J. Clin. Nutr.* **2021**, *113*, 446–455. [CrossRef]
6. Schulpen, M.; Can den Brandt, P.A. Adherence to the Mediterranean diet and overall cancer incidence: The Netherlands Cohort Study. *J. Acad. Nutr. Diet.* **2021**, *121*, 242–252. [CrossRef]

7. Morze, J.; Danielewicz, A.; Przybyłowicz, K.; Zeng, H.; Hofmann, G.; Schwingshackl, L. An updated systematic review and meta-analysis on adherence to Mediterranean diet and risk of cancer. *Eur. J. Nutr.* **2021**, *60*, 1561–1586. [CrossRef]
8. Milenkovic, T.; Velija Asimi, Z.; Bozhinovska, N.; Macut, D.; Bjekic-Macut, J.; Rahelic, D.; Burekovic, A. Mediterranean diet and type 2 diabetes mellitus: A perpetual inspiration for the scientific world. A review. *Nutrients* **2021**, *13*, 1307. [CrossRef]
9. Mantzorou, M.; Vadikolias, K.; Pavlidou, E.; Tryfonos, C.; Vasios, G.; Serdari, A.; Giaginis, C. Mediterranean diet adherence is associated with better cognitive status and less depressive symptoms in a Greek elderly population. *Aging Clin. Exp. Res.* **2021**, *33*, 1033–1040. [CrossRef]
10. Capone, R.; El Bilali, H.; Bottalico, F. Assessing the sustainability of typical agro-food products: Insights from Apulia Region, Italy. *New Medit.* **2016**, *15*, 28–35.
11. Karam, J.; Bibiloni, M.; Serhan, M.; Tur, J. Adherence to Mediterranean diet among Lebanese university students. *Nutrients* **2021**, *13*, 1264. [CrossRef]
12. Biasini, B.; Rosi, A.; Menozzi, D.; Scazzina, F. Adherence to the Mediterranean Diet in Association with Self-Perception of Diet Sustainability, Anthropometric and Sociodemographic Factors: A Cross-Sectional Study in Italian Adults. *Nutrients* **2021**, *13*, 3282. [CrossRef] [PubMed]
13. Taherdoost, H. What is the best response scale for survey and questionnaire design; review of different lengths of rating scale/attitude scale/Likert scale. *Hamed Taherdoost* **2019**, *8*, 1–10.
14. Galbete, C.; Schwingshackl, L.; Schwedhelm, C.; Boeing, H.; Schulze, M.B. Evaluating Mediterranean diet, and risk of chronic disease in cohort studies: An umbrella review of meta-analyses. *Eur. J. Epidemiol.* **2018**, *33*, 909–931. [CrossRef] [PubMed]
15. García-González, Á.; Achón, M.; Krug, A.C.; Varela-Moreiras, G.; Alonso-Aperte, E. Food Sustainability Knowledge and Attitudes in the Spanish Adult Population: A Cross-Sectional Study. *Nutrients* **2020**, *12*, 3154. [CrossRef]
16. Aridi, Y.S.; Walker, J.L.; Roura, E.; Wright, O.R. Adherence to the Mediterranean diet and chronic disease in Australia: National nutrition and physical activity survey analysis. *Nutrients* **2020**, *12*, 1251. [CrossRef] [PubMed]
17. Veronese, N.; Notarnicola, M.; Cisternino, A.; Inguaggiato, R.; Guerra, V.; Reddavide, R.; Donghia, R.; Rotolo, O.; Zinzi, I.; Leandro, G.; et al. The MICOL study group. Trends in adherence to the Mediterranean diet in South Italy: A cross sectional study. *Nutr. Metab. Cardiovasc. Dis.* **2020**, *30*, 410–417. [CrossRef]
18. Kyriacou, A.; Evans, J.; Economides, N.; Kyriacou, A. Adherence to the Mediterranean diet by the Greek and Cypriot population: A systematic review. *Eur. J. Public Health* **2015**, *25*, 1012–1018. [CrossRef]
19. Gerini, F.; Dominici, A.; Casini, L. The effects of the COVID-19 pandemic on the mass market retailing of wine in Italy. *Foods* **2021**, *10*, 2674. [CrossRef] [PubMed]
20. Foscolou, A.; Magriplis, E.; Tyrovolas, S.; Soulis, G.; Bountziouka, V.; Mariolis, A.; Piscopo, S.; Valacchi, G.; Anastasiou, F.; Gotsis, E.; et al. Lifestyle determinants of healthy ageing in a Mediterranean population: The multinational MEDIS study. *Exp. Gerontol.* **2018**, *110*, 35–41. [CrossRef]
21. Vermeir, I.; Weijters, B.; De Houwer, J.; Geuens, M.; Slabbinck, H.; Spruyt, A.; Verbeke, W. Environmentally sustainable food consumption: A review and research agenda from a goal-directed perspective. *Front. Psychol.* **2020**, *11*, 1603. [CrossRef]
22. Civero, G.; Rusciano, V.; Scarpato, D.; Simeone, M. Food: Not only safety, but also sustainability. the emerging trend of new social consumers. *Sustainability* **2021**, *13*, 12967. [CrossRef]
23. Caparello, G.; Galluccio, A.; Giordano, C.; Lofaro, D.; Barone, I.; Morelli, C.; Sisci, D.; Catalano, S.; Andò, S.; Bonofiglio, D. Adherence to the Mediterranean diet pattern among university staff: A cross-sectional web-based epidemiological study in Southern Italy. *Int. J. Food Sci. Nutr.* **2019**, *71*, 581–592. [CrossRef] [PubMed]
24. Dinu, M.; Pagliai, G.; Giangrandi, I.; Colombini, B.; Toniolo, L.; Gensini, G.; Sofi, F. Adherence to the Mediterranean diet among Italian adults: Results from the web-based Medi-Lite questionnaire. *Int. J. Food Sci. Nutr.* **2020**, *72*, 271–279. [CrossRef] [PubMed]
25. Moore, K.; Hughes, C.; Ward, M.; Hoey, L.; McNulty, H. Diet, nutrition, and the ageing brain: Current evidence and new directions. *Proc. Nutr. Soc.* **2017**, *77*, 152–153. [CrossRef]
26. Lassale, C.; Batty, D.; Baghdadli, A.; Jacka, F.; Sanchez-villegas, A.; Kivimaki, M.; Akbaraly, T. Healthy dietary indices, and risk of depressive outcomes: A systematic review and meta-analysis of observational studies. *Mol. Psychiatry* **2019**, *24*, 965–986. [CrossRef]
27. Wongprawmas, R.; Mora, C.; Pellegrini, N.; Guiné, R.P.; Carini, E.; Sogari, G.; Vittadini, E. Food Choice Determinants and Perceptions of a Healthy Diet among Italian Consumers. *Foods* **2021**, *10*, 318. [CrossRef]
28. Bach-Faig, A.; Berry, E.M.; Lairon, D.; Reguant, J.; Trichopoulou, A.; Dernini, S.; Medina, F.X.; Battino, M.; Belahsen, R.; Miranda, G.; et al. Mediterranean diet pyramid today. Science and cultural updates. *Public Health Nutr.* **2011**, *14*, 2274–2284. [CrossRef]
29. Martínez-González, M.A.; Gea, A.; Ruiz-Canela, M. The Mediterranean diet and cardiovascular health: A critical review. *Circ. Res.* **2019**, *124*, 779–798. [CrossRef]
30. Abrahamse, W. How to Effectively Encourage Sustainable Food Choices: A Mini-Review of Available Evidence. *Front. Psychol.* **2020**, *11*, 589674. [CrossRef]