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Perceptions from Members-Consumers of a University Community for Sustainable and Healthy Eating: Evidence from Greece

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Abstract: Healthy eating is a vital component of a sustainable daily life, especially after the pandemic of COVID-19. In this study we investigated the perceptions and attitudes of the members of a Greek University community especially the young members of this on:i) health itself, ii) healthy eating, and iii) healthy eating campaigns today. The research was conducted in the last three months of 2023, via a questionnaire survey electronically, and 1406 members-consumers, participated. Statistical analysis included descriptive and cluster analysis to group respondents into homogenous segments was performed by employing One-Way Anova. The highlights of the results indicate that consumers perceive physical, mental health and energy efficiency as health preconditions, while they perceive a balanced and sustainable diet as the main parameter of healthy eating. They are influenced mostly by doctors and health providers and use information mostly based on common sense and upbringing for their healthy eating choices. The cluster analysis revealed two distinctive groups of consumers categorized by this study as the "approachables"(54,5%) effected by the todays sustainable knowledge and concepts on healthy eating, and the "conservatives" (45,5%) who they reluctant to accepted these as such.

Keywords: healthy eating; healthy eating advertisement; healthy eating campaigns; approachable consumers; conservative consumers

1. Introduction

Social marketing campaigns for better health have successfully reduced smoking prevalence, drinking and driving, and several other public health outcomes including healthy eating [1]. Food product manufacturers frequently employ health and nutrition-related claims as a marketing strategy to inform consumers about important, yet unknown, health benefits [2]. Concerningly, given that products bearing claims are not always healthier or more sustainable than those without, claims are also commonly used to skew opinions about how sustainable or healthful food and beverages are [3]. The majority of studies on eating behaviors and habits have concentrated on consumption and selection behaviors, with the latter getting the most attention. Changes in eating habits are frequently made in tandem with increases in physical activity to promote healthy lifestyles and weight control [4]. A healthy diet and improving the health and well-being of consumers have been the main goals of numerous social marketing diet-related campaigns [5–9]. These campaigns are supported by the food industry, the government, and nongovernmental organizations; the data indicates that consumers appear to understand and be receptive to the information provided.

This research investigates the member-consumers of a Greek academic community's understanding of healthy eating perceptions and campaigns. It will inform us and provide us with information about the young with high educational levels mostly, perceptions of the term "healthy eating" and whom they trust for healthy eating campaigns. The advertising sector is required to

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develop and deliver improved healthy eating messages to encourage better food choices and as a result, improve the nutritional status of the community. The paper continues with the literature review and the sections on methodology, results, and discussion following.

2. Literature Review

The World Health Organization defines health as a condition of total physical, mental, and social well-being, rather than just the absence of disease or weakness [10]. Scientific research has confirmed a strong and consistent connection between individuals' mental and physical well-being [11]. Attaining a state of well-being is a paramount objective for individuals in their quest for a fulfilling existence [12]. An investigation into the impact of food can enhance our comprehension of how eating behavior patterns are formed. The COVID-19 pandemic had an impact on various aspects such as the economy, public health, and lifestyle, including food consumption [13]. Health outcomes are greatly influenced by individual behaviors such as diet quality, physical activity, alcohol consumption, and sleep. These behaviors, in turn, are influenced by socioeconomic factors [14]. During the COVID pandemic, food-related behavior has been significantly impacted. This has resulted in limited access to daily shopping and has influenced people's choices for a healthy balanced diet. As a consequence, there has been an increased reliance on highly processed, ready-to-eat cereals and junk foods, which are rich in salt, sugar, and fats. These dietary habits can contribute to an elevated susceptibility to chronic diseases such as obesity, heart disease, stroke, type 2 diabetes, certain cancers, and chronic kidney disease [13].

The concept of healthy eating is widely recognized as a fundamental approach for individuals to attain and sustain good health, even though the specifics of what constitutes healthy eating are multifaceted [17]. The Dietary Guidelines for Americans 2020–2025 recommend a healthy eating plan that prioritizes fruits, vegetables, whole grains, and fat-free or low-fat dairy products. It also suggests including a diverse range of protein sources such as seafood, lean meats, poultry, eggs, legumes, soy products, nuts, and seeds [18]. This diet is characterized by its low content of added sugars, sodium, saturated fats, trans fats, and cholesterol, while also ensuring that it aligns with your daily calorie requirements. Adopting the Mediterranean diet as a consistent eating habit is the optimal choice for maintaining good health [19]. Nevertheless, studies have demonstrated that adolescents living in Westernized nations tend to consume substantial quantities of energy-dense, nutrient-deficient foods and beverages, as well as foods that are high in saturated fat and sugar while having low intake of fruits and vegetables [20]. College students consume nutritionally deficient foods and exhibit limited compliance with the Mediterranean diet [21,22]. Therefore, it is imperative to increase awareness and establish intervention programs that encourage a healthy lifestyle among this demographic [22]. These programs should take into account factors related to food literacy and address behavioral concerns that influence their food choices [23]. Conversely, adults adopt a distinct perspective on this matter, expressing a desire to consume more nutritious foods and acknowledging the correlation between dietary intake and well-being [24,25]. Multiple studies indicate that individuals possess certain beliefs regarding the concept of healthy eating and the importance of avoiding contaminants and toxins. Consequently, they tend to prioritize natural and/or organic food options [26]. However, the concept of maintaining a nutritious diet has frequently been characterized as challenging and arduous to accomplish.

The pandemic has not had a significant impact on the nutritional quality and sensory appeal, which are two of the main factors influencing food choices [27]. Over the years, experts have prioritized the promotion of medical guidelines regarding nutrient intake and proper consumption. They have also provided recommendations for a balanced diet that does not prohibit the consumption of specific food products. According to the analyzed data, it appears to be more feasible to promote the exploration of healthier food choices among consumers, such as fresh fruits, vegetables, and whole foods [27]. Positive predictors and significant determinants of healthy eating attitudes were motives that indicate healthier perceptions, such as weight-control, maintaining a healthy diet, and choosing organic food [28]. For the past two decades, health literacy has been a significant concern for health care planners and specialists, including dietitians, in health care

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systems. Health literacy refers to the ability of individuals to acquire, comprehend, and utilize basic health information and services in order to make informed health decisions [29]. Health literacy is linked to nutrition behaviors such as evaluating portion sizes, comprehending food labels, and selecting nutritional sources, all of which impact the quality of one's diet. Moreover, the factors of self-efficacy and health literacy were found to be predictors of the utilization of food labels, which in turn had a positive impact on the overall quality of one's diet [30]. The implementation of nutrition labeling enhances consumers' capacity to comprehend nutritional data and deters the selection of unhealthy products [31]. Factors related to family and household dynamics were found to significantly impact healthy dietary behaviors [32]. The utilization of social media platforms for promoting healthy eating can have an impact on the dietary habits of individuals within one's social network [33]. The perception of website credibility is significantly influenced by the expertise of the source and the accuracy of the message [34]. Additional sources of nutrition and health information include governmental and non-governmental institutions such as hospitals, as well as newspapers, dietitians, and the social environment [35,36]. The extent to which an individual depends on each source is heavily influenced by their age and level of education. Typically, data sourced from government and noncommercial websites is considered to be more reliable and authoritative [37].

Consumer skepticism has historically been directed towards advertising, reflecting a predisposition to doubt the credibility of the information conveyed through advertisements [38]. There are multiple mechanisms through which information can exert an impact on consumer decisions regarding food. Consumers are also indirectly influenced by advertising and various media campaigns, as well as local or national food policies [39]. In order to encourage people to adopt healthy eating habits, public health authorities globally have implemented diverse initiatives. These initiatives share a common goal of promoting the consumption of nutritious foods by providing information that emphasizes the nutritional value of foods and their effects on health and body weight [40]. A significant portion of the population in industrialized countries does not adhere to dietary guidelines [41,42]. These statistics indicate that the majority of public health initiatives focused on disseminating information to enhance the quality of diet have achieved only limited success. Therefore, it is necessary to adopt new approaches to develop effective strategies for promoting healthy eating habits.

Food companies have implemented various tactics to enhance their public perception by cultivating a healthier brand image. One approach has involved procuring new brands in order to position themselves as nutritious alternatives to current food options [43]. Enhancing the nutritional value of products has emerged as a crucial domain of advancement in the food and beverage sector. The nutritional quality of a product has a curved relationship with the profit of the firm, and this relationship is positively influenced by package innovation and advertising [44]. Public health campaigns promoting food consumption and daily diet have been implemented through national programs, utilizing public dietary recommendations [45]. Appropriateness of interventions relies on their alignment with individuals' daily priorities, constraints, and the prevailing cultural values of their social environment [46,47]. Variations in people's interpretation of health can lead to notable variations in behavior, thus nutrition education could be enhanced by designing customized intervention campaigns that effectively address the health-related motivations of specific subgroups [48–50].

2. Materials and Methods

2.1. Data Collection and Characterization

This survey was based on a structured questionnaire. The research was focused on the attitudes of the human resources (students, professors, staff) of the University of Ioannina, Greece, which consists of seven schools and fifteen departments with more than 30,000 active students and more than 5,000 professors and staff. Ioannina is a city in Greece that is located in the northwest of the country, opposite Italy with 112.486 inhabitants (Figure 1) [51]. The research was conducted through the online platform Google Forms and distributed to the members of the university's community

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through their academic emails. GDPR approval was granted by the responsible bureau of the University according to Greek regulation, the answers were anonymous, as well as the emails were included. In the survey responded 1046 members-consumers of the University, constitute 3,5% of the total 35.000 members that was the survey population.

Figure 1. The map of Greece where also marks the Ioannina regional unit.

The questionnaire is composed of seven parts, in addition to the sociodemographic part, which was derived from previous related studies [49,50] but revised, aiming to serve the objectives of this study (Table S1). Initially, participants completed five questions about their sociodemographic characteristics, specifically gender, age, level of education, civil state, and job situation. In the first and second part, consumers' perceptions about health and healthy eating, respectively, were examined (total of 12 questions). The third and fourth parts consisted of questions regarding the influences, as well as the sources that consumers use to keep informed about healthy eating (a total of 13 questions). The fifth part consisted of questions to investigate the consumers' views relatively with the objectives of the advertisers promoting healthy food (total of 4 questions. Finally, part six and seven included questions about consumers' opinions on which organizations are responsible for developing and running healthy eating campaigns, and who should be responsible for regulating those campaigns (a total of 9 questions).

2.2. Data Analysis

All of the included multi-item questions with a five-point Likert scale (1=strongly disagree, 5=strongly agree). Mean values for each item of the questions were extracted for the results' expression. Cluster analysis was performed to group respondents into homogeneous segments of consuming perceptions. Cluster analysis is a tool that uses variable combinations to sort observations into two or more clusters [52]. Identifies a system for categorizing observations into groups, with objects within each group sharing similar characteristics. Many authors have used this technique for segmentation in the field of consumer food science [53–55]. The clusters were validated using One-Way ANOVA, which stands for Analysis of Variance and is a statistical test used to compare the means of multiple groups [56]. All statistical analyses were carried out using IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp. (New York, USA). All of the participants' answers were evaluated.

3. Results

Table 1 presents the demographics of the participants. This survey included the majority of females (72,8%) a finding similar to that of other researchers in nearby Italy [57,58], of young

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participants 18-25 years old (74,0%), mainly single (82,8%) and stu-dents of the university (71,4%) as expected based on the target group of the research.

Table 1. Sociodemographic characterization of the sample.

Groups	N	(%)
Male	284	27.2
Female	762	72.8
18-25	774	74.0
26-35	91	8.7
36-45	64	6.1
46-55	86	8.2
56+	31	3.0
Single	866	82.8
Married	156	14.9
Other	24	2.3
Employee	254	24.3
Unemployed	34	3.3
Student	747	71.4
Retired	11	1.1
None/Primary school	5	0.5
Secondary school	2	0.2
High school	221	21.1
University	818	78.2

Consumers' responses towards their health and healthy eating attitudes and perceptions are illustrated in Table 2.

Table 2. Consumers' attitudes on health and healthy eating attitudes and perceptions.

HEALTH AND HEALTHY EATING PERCEPTIONS OF THE CONSUMERS*					
CONSUMERS' ATTITUDES TOWARDS "HEALTH"	Not at all important	Less important	Moderately important	Quite important	Very important
Keeping the body in good condition (fitness)	1	1,9	9,1	41,6	46,5
Having the energy to do the things I want to do	0,6	1,3	5,4	33,9	58,7
Having no physical health problems	0,5	0,9	3,7	22,0	72,9
Looking good	3,3	10,4	30,4	35,5	20,5
Protecting my body against harmful influences	1,8	3,3	14,4	36,6	43,8
Emotional well-being, feeling good mentally	1,2	0,9	6,0	24,0	67,9
CONSUMERS' DEFINITION OF "HEALTH EATING"	Not at all important	Less important	Moderately important	Quite important	Very important
Eating vegetables and fresh fruit	0,7	3,4	18,6	48,6	28,7
Balanced diet/eating food from all five food groups	0,8	1,0	3,1	20,3	75,0

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Eating to stay healthy	0,9	3,0	11,5	36,4	48,3
Not eating junk food	2,8	9,8	26,6	32,5	28,3
Eating vitamins	1,7	3,5	14,6	35,5	44,6
Eating protein	2,3	5,8	15,8	36,6	39,5
CONSUMERS' INFLUENCES OF HEALTHY EATING	Not at all important	Less important	Moderately important	Quite important	Very important
Food manufacturers	14,6*	20,5	30,0	23,5	11,4
Supermarkets	17,9	25,0	28,3	21,6	7,2
Fast food restaurants	33,7	26,4	20,7	13,5	5,7
Food packaging	19,4	22,8	27,8	21,4	8,4
Government	46,4	24,0	16,8	7,5	5,4
Family and friends	7,7	10,7	26,4	34,3	20,8
Doctor or health care provider	3,6	6,7	17,6	32,5	39,6
CONSUMERS' SOURCES OF INFORMATION ABOUT "HEALTH EATING"	Not at all important	Less important	Moderately important	Quite important	Very important
Books, Magazines, Newspapers	22,0	24,9	26,9	19,0	7,3
Internet	6,0	7,8	22,2	34,1	29,8
Commonsense/ upbringing	3,0	4,2	17,3	39,7	35,9
School/ University	4,1	6,4	15,0	33,3	41,2
Professionals (doctors, dietitians)	13,8	14,9	26,4	29,1	15,9
Don't use any sources	71,5	12,0	11,4	3,0	2,2

*Values represent %.

The results of the Table 2 show that:

On consumers' perception of "Health definition":

For most of the participants, it is quite or very important by more than 90% to have no physical health problems (94,9%), emotional wellbeing and feeling good mentally (91,9%) and have the energy to do their activities (92,6%). In contrast, looking good was the least preference (56%), and moderately keeping the body in good condition by 88,1%.

On consumers' definition of "health eating":

For most of the participants, it is quite or very important by far to follow a balanced diet that involves foods from all the five groups (95,3%), less to eat for staying healthy (84,7%), eating foods with vitamins (80,1%), proteins (76,1%), vegetables and fresh fruits (77,3%) and not eating junk food (60,8%).

On consumers' influences on "health eating":

The consumers of this study reported that they are influenced by more than 50% by their doctor or health care provider (72,1%) and family and friends (55,17%), while they reported being less than 50% influenced in decreasing order by the food manufactures (35,1%), the food packaging (29,8%), the super markets (28,8%), the fast food restaurants (19,2%), and the government (12,9%).

On consumers' source of information about "health eating":

For the participants in this study, it is quite or very important the commonsense/upbringing (75,6%), the school/university (74,5%) and the internet (63,9%)., and to less extend the professionals

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(45%, and the books and magazines 26,3%. Only 5,2% reported that they don't use any sources for their information.

Table 3 presents the consumers' responds towards their attitudes on advertisers' objectives, on who should be responsible for developing and running healthy eating campaigns and on who should be responsible for regulating those campaigns.

Table 3. Consumers' attitudes and perceptions on health eating campaigns.

HEALTHY EATING CAMPAIGNS PERCEPTIONS OF THE CONSUMERS*					
TOWARDS ADVERTISERS' OBJECTIVES ON HEALTH FOODS	Not at all Important	Less important	Moderately important	Quite important	Very important
Aim is to inform	17,5*	23,2	35,2	19,2	4,9
Essential information	19,7	29,8	31,9	13,3	5,3
Concerned with making money	2,3	2,1	5,4	22,3	67,9
Consumers' best interest	6,0	10,1	25,8	31,8	26,2
ORGANIZATIONS FOR DEVELOPING AND RUNNING HEALTH EATING CAMPAIGNS	Not at all important	Less important	Moderately important	Quite important	Very important
Non-governmental health organizations	10,7	13,6	31,4	28,8	15,6
Government	16,1	14,5	24,1	24,3	21,0
Food manufacturers	6,7	9,0	26,8	33,6	24,0
Supermarkets	13,8	20,4	30,6	23,0	12,2
Fast-food retailers	41,4	22,6	20,1	8,4	7,6
RESPONSIBLE BODIES FOR REGULATING HEALTHY EATING CAMPAIGNS	Not at all important	Less important	Moderately important	Quite important	Very important
Government	10,1	10,1	21,0	27,3	31,4
Independent bodies	6,5	9,0	28,5	31,7	24,3
Medical professionals	1,9	1,8	7,5	29,1	59,8
Health organizations	1,6	1,3	6,6	24,7	65,8

*Values represent %.

The results of the Table 3 show on consumers' perceptions and attitudes:

On "Healthy food" campaigns:

Most of the participants' opinions (answers quiet and very important) about the advertisers' objectives are that they are primarily concerned with making money (90,2%), to a much less extent serving the consumers' best interests (58%), and only to inform the consumers (24,1%) or to provide essential information required (18,6%).

On organizations running "Health eating" campaigns:

Participants believe moderately or low (answers quite and very important) that food manufacturers first (57,6%), the government second (48,3%), and non-governmental organizations third (44,4%) are suitable for running healthy eating campaigns.The supermarkets (35,2% and the fast-food retailers are low in their perception.

On organization regulating "Health eating" campaigns

Participants believe by far (answer quite and very important) the health organizations first (90,5%) and the medical professionals second (88,9%) are the proper bodies for regulating health eating campaigns. Their opinion is moderately to low for the government (58,7%) and the independent bodies (56%) undertaken this role.

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Cluster analysis was used to create consumer segments with common features. Based on the results, two statistically meaningful clusters of consumers were formed using 3 variables. The first variable is presented in the Table 2; Consumers' sources of information about healthy eating. The second and third variables are presented in the Table 3; Consumers' perceptions about the objectives of advertisers and organizations for developing and running healthy eating campaigns.

Table 4 depicts the distribution of the two clusters. The first cluster includes 570 participants (54,50%), while the second cluster consists of 476 consumers (45,50%).

Table 4. Cluster distributions.

Cluster	*N*	*% of Total*
1	570	54.50%
2	476	45.50%
Total	1046	100.00%

Table 5 presents the average values of the variables that showed significant variation and are the most important attitudes of participants regarding their perceptions of health, and healthy eating. Small, but significant differences are observed between the two clusters, defining the characteristics of the consumers classified in these two groups.Based on these results presented below are the definitions of "approachable" for cluster 1 and "conservatives" for cluster 2. The rationale for these cluster definitions is explained in detail below in the discussion section.

Table 5. Results of Cluster Analysis – Characteristics of each cluster.

	Cluster 1 ***"Approachable"*** *Mean value*	***Cluster 2*** ***"Conservatives"*** *Mean value*
For me, Health is mainly about		
Keeping the body in good condition (fitness)	4.37	4.23
Having the energy to do the things I want to do	4.57	4.39
Having no physical health problems	4.71	4.60
Looking good	3.68	3.49
Protecting my body against harmful influences	4.28	4.04
Emotional well-being, feeling good mentally	4.65	4.46
Definition of "heathy eating"		
Eating vegetables and fresh fruit	4.14	3.86
Balanced diet/eating food from all five food groups	4.76	4.58
Eating to stay healthy	4.40	4.14
Not eating junk food	3.85	3.60
Eating vitamins	4.33	3.99
Eating protein	4.18	3.90
Influences on healthy eating		
Food manufacturers	3.19	2.70
Supermarkets	3.03	2.42
Fast-food restaurants	2.52	2.07
Food packaging	2.99	2.49
Government	2.23	1.75
Family and friends	3.75	3.20
Doctor or health care provider	4.17	3.75
Who should be responsible for regulating healthy eating campaigns		
Government	3.89	3.24
Independent bodies	3.82	3.29
Medical professionals	4.61	4.22

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Health organizations	4.67	4.33

*All variables are on a 5-point Likert scale (1=strongly disagree, 5=strongly agree).

For the determination of health, based on the mean values for each item of the variables, we observe that the two groups focus with equal weight on the questions posed, therefore can not characterized diffrently. Specifiically, "keeping the body in good condition" Cluster 1 exhibited M=4,37, while Cluster 2 scored M=4,23, "having the energy to do the things I want to do" M=4,57 for Cluster 1 and M=4,39 for Cluser 2, "having no physical health problems" M=4,71 for Cluster 1 and M=4,60 for Cluster 2, "protecting my body against harmful influences" M=4,28 for Cluster 1 and M=4,04 for Cluster 2 and "emotional well-being, feeling good mentally" M=4,65 for Cluster 1 and M=4,46 for Cluster 2. The least important component, similarly with the statistical results shown above in Table 2, for both groups is "looking good" presenting mean value 3,68 for Cluster 1 and 3,49 for Cluster 2.

For the definition of healthy eating, Cluster 1 consumers emphasize both the concept of a complete health diet regarding mean values of "balanced diet/eating food from all five food groups" and "eating to stay healthy" 4,76 and 4,40, respectively, as well as the individual actions to achieve it, such as the consumption of "vegetables and fresh fruit" M=4,14, "eating vitamins" M=4,33 and "eating proteins" M=4,18. Therefore, this cluster group can be characterized as "approachables" by the modern health eating concepts. Contrary, cluster 2 consumers, are characterized as "conservatives" or "old fashion" sinc they are focusing mainly on the global dimension of healthy eating emphasizing on all 5 food groups for balanced diet and maintaining health; M=4,58 for balanced diet and M=4,14 for eating to stay healthy. However, the consumption of "vegetables and fresh fruit" M=3,86, vitamins M=3,99 and proteins M=3,90 seems not to be priority for them. Furthermore, avoiding fast-food is secondary to both groups of consumers; Cluster 1 M=3,85 and Cluster 2 M=3,60.

The influences on healthy eating also noted some differences between the two clusters. Cluster 1 individuals, characterized as "approachables" is clear that are more influenced by health professionals M=4,17, with the family environment M=3,75, food manufacturers M=3,19 and supermarkets M=3,03 following on a second level. It is also evident that fast food restaurants M=2,52 and the government M=2,23 do not cater to this group of consumers. Also noteworthy is the low confidence shown by these consumers on the food packaging M=2,99. Contrary, Cluster 2 individuals are more strict or even "absolute" consumers influenced by no one for their choices as it was the old fashion way therefore characterized once again as "conservatives". They are moderately influenced by doctors and nutritionists M=3,75 and their family environment M=3,20, while showing the least trusting in food producers M=2,70, supermakets M=2,42, food packaging M=2,49 and fast food restaurants M=2,07. The government's information campaigns appear to be disregarded according to their responses to the lower selection of the questionnaire scale M=1,75.

Both cluster groups agree in the field of "Who should be responsible for regulating healthy eating campaigns", reasonable for "approachables" and "conservatives" consumers attributing as more important the action of medical professionals (M_1=4,61, M_2=4,22) and health organizations (M1=4,67, M2=4,33) than that of government (M1=3,89, M2=3,24) and independent bodies (M1=3,82, M2=3,29). However, there is also in this area a greater tendency from group 2 for responses towards the lower rung of the scale.

4. Discussion

Healthy eating is one of the main ways that directly contributes to achieving a healthier lifestyle. Mediterranean consumers, including Greek citizens, have a positive association between perception, motivation for health behavior and adherence of healthy diet [59]. Similar pattern was identified by us studying the food choice motives, based on the ten main parameters, of Greek students aged 18-25 years old [60]. The results indicated that the young consumers have returned to their pre COVID-19 food choice preferences, including health, even though health is not at the top of their priorities for food.

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In this research consumers' attitudes towards health were examined first and found that the combination of mental and physical health, including the required energy supply is an integrated concept of their perception of health. These findings are in line with the results of Leite's research [61], according to which, health perception can be an important factor to predict psychological well-being, aligned with a holistic approach to the term of health. Furthermore, our findings showed that least emphasis is given by the participants on physical appearance and fitness which proves that they have a deeper knowledge about health and that they are not confined to superficial traits.

Consumers' attitudes towards healthy eating definitions were examined then and defined by far the balanced diet containing fruits, vegetables, grains, protein foods and dairy products as the most important parameters.Our findings coincide with the consumers' perception in Coumans's study published recently [62].

Consumers' influences on health eating were examined than and found that participants of the study are influenced primarily by the doctors / health providers, or family and friends.These results agree with the statistically positive linear effect between health provider influence and eating behavior and between health literacy and health perception [63] and the significant correlation was found between family role performance and healthy eating perceptions [64,65].The characteristics of the food such as the food manufacturers, the packaging, the supermarkets, the restaurants and even the least by the government have less influence in our study as a source of information for on health eating by the consumers.

Examining the source of information of the consumers of this study we found that participants use the common sense / upbringing and the schools / universities and to less extend the internet as the main sources of information for health eating knowledge. The importance of online information sources such as internet, social media etc. to consumers' information – seeking for health nutrition has been highlighted by other researchers systematically throughout the years [66–68]. In a recent study, Feher et al. examined the correlation between online as well as offline information-seeking actions regarding healthy nutrition. The findings indicate that both online and offline sources of information play a significant role in influencing individuals' acceptance of healthy foods.However, when it comes to rejecting healthy nutrition or having mixed feelings about it, the primary sources of information are not as clear-cut. There is a tendency to believe that these attitudes may stem from childhood or have a familial origin.These findings corroborate our results regarding the subject matter, as there is a direct correlation between upbringing and childhood experiences as well as family background.

Consumers' perceptions on healthy eating campaigns were also evaluated in this study using three parameters. In terms of the advertisements objectives participants believe by far that it is the profit for the interested party implementing it. In terms of the suitable organizations developing and running such campaigns they believe that food manufactures, the government and the non - governmental health organizations should run such campaigns. Finally, they believe that the health organizations and the health professionals are the proper bodies for regulating such campaigns and not the government or other independent bodies. These results agree with the finding of Jones et al. [70] in 2009 by Australian consumers who perceive health eating information to be the domain of the health industry. They also perceived that there are ambiguities and shifts in conventional trends, such as food companies may be seen to develop credibility over time as healthy eating advertiser a finding which is proved by our results 25 years later. The literature since then is focused with the efficiencies of the healthy campaigns regarding the source of initiation [1].

The results of the cluster analysis provided two cluster focus groups with similarities, but differences as well on health and healthy eating based on the mean values for each item of the variables. The 1st cluster group is defined as "approachable" because they are approachable to today's healthy eating perceptions of the synchronous consumers. Contrary, the 2nd cluster group is defined as "conservatives" since they are old-fashioned with low prestige and believe in modern healthy eating consumers' attitudes.

Both cluster groups exhibited similar attitudes to the definition of health with most importantly the good condition of the body, with no physical and mental health problems, and adequate energy

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for pleasant life. This is expected since the definition of health hasn't changed throughout the last few years.

However, the attitudes of the two cluster groups concerning healthy eating differs in many ways.Approachable recognize in addition to the importance of the balanced diet, the importance of vegetables, fresh fruits, vitamins, proteins and eating to stay healthy as well.Contrary, conservatives even though they recognize the balance diet as such they don't pay much attention to the other parameters.

Approachable are influenced by external providers such as health professionals / doctors, the family, and the food manufactures on healthy eating. However. conservatives are less influenced by all these providers showing low confidence and trust to these major sources of information. This is an old fashion approach since the days when the sciences of food and health hadn't made significant progress in the field yet, ensuring accuracy of the providing data. It is remarkable, that both groups, but especially the conservatives consider the government, as a source of information about a healthier diet, insignificant.

Both groups approachable and conservatives equally agree that media professionals and health organizations should be responsible for regulating health eating campaigns. However, even though approachable trust independent bodies and government too for the same job, conservatives do not trust these bodies for it which is also an old fashion opinion for the efficiency of these bodies.

5. Conclusions

This research aimed to explore consumers' perception from a university community on health and healthy eating in the context of the concept and of the sources that influence their formation. Most of the participants were young consumers, mainly college students.

The answers given by the participants in the study, presented above, indicate that their interest, influence, source of information in their health, and healthy eating is on a holistic, rather than superficial, one-sided level approach.They are well informed on the subject matters, so they have a critical opinion for each item. Consumers of the study consider the eating campaigns mainly source of income for the advertisers, mainly the food advertisers, with the medical professionals and the health organization the most appropriate bodies regulating such campaigns. The study indicates that fast food restaurants and the government do not cater to consumers, having failed rather to approach the goal of their campaigns, as well as the food industry seems that their main objective to communicate with consumers through its products is not achieved effectively.

The statistical treatment applied to the data obtained through the questionnaire, showed that the participating in the study consumers is divided into two distinctive cluster groups. The first consists of consumers who pay attention to details, and that can be assumed by the whole range of their responses, defined therefore as approachable". Their choices are strongly influenced by qualified health professionals, and they want the campaigns about healthy eating to be controlled and regulated by them. Family and friends, as another source, can influence their food choices as well. One the other hand, in the second group are consumers that have more stable and strict opinion defined therefore as "conservatives". For them, a healthy diet is achieved by a balanced diet only.They may be influenced by doctors, and their environment, but any other source leaves them indifferent. In an equal way of thinking, both groups prefer the experts rather than the government or the independent bodies to regulate the healthy eating campaigns.

The results of the study can contribute to the feedback of information to the responsible bodies expanding from food manufacturers to government and health providers on the effectiveness of their actions to inform the public about a healthier diet. Providing information is a simple process, but creating trust between transmitter and receiver and then assimilating of this information is a more complicated process that needs time to be achieved. Young adults with university education seem to care about their health and nutrition, but the abundance of information provided creates a confused environment at all levels. Therefore, the coordinated actions to be carried out shall be authoritative, valid and clear in order to achieve their purpose.

The study includes limitations mainly on the sample of the participating consumers being within a university college, and female mostly, as it is the case for many other related studies, however.Furthermore, the restriction to the Greek consumers only is a limitation and the next study should be expanded to other countries as well in order to assess the global validity of the findings.

Supplementary Materials: The following supporting information are included Table S1: Questionnaire on consumers' perceptions on healthy eating and healthy eating advertisements in Greece today.

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