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Original Article

Increasing Mediterranean Diet Adaptation in adults decreases energy intake[1]

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Abstract. *Objective:* The aim of this study is to determine the relationship between Mediterranean Diet (MD), one of the sustainable healthy eating models, and nutritional status in adult individuals. *Methods:* The study was conducted with a total of 307 individuals between the ages of 18-64 who applied to the Sakarya University Healthy Nutrition / Obesity Counseling Unit, between September 2019 and February 2020. The data were collected by face-to-face interview technique. Among the collected data; demographic information, 24-hour retrospective food consumption record and food consumption frequency. In addition, anthropometric measurements of the participants were made and Mediterranean Diet Compliance Scale was applied. *Results:* According to the results obtained, the individuals participating in the research; The relationship between daily energy, carbohydrate, protein, saturated fatty acids, carotene, Vitamin E, Vitamin C, Vitamin K and sodium intake with AD was statistically significant ($p < 0.05$). *Conclusion:* As a result; Increasing compliance with MD can prevent chronic diseases in adult individuals. It can also play an important role in preventing obesity as it reduces energy intake.

Keywords: Mediterranean Diet, Healthy Life, Eating Habits

Introduction

Nutrition is the intake of nutrients in sufficient amounts and at regular meals and their use in the body to protect and improve health, increase the quality of life, improve growth and development, and increase productivity (1). Nutrition continues from intrauterine life until death. The impact of nutrition on health cannot be denied (1). Nutrition is used to protect our health and as a medical nutrition therapy in various diseases (2). WHO and all major scientific associations acknowledge that diet plays an important role in the prevention and treatment of noncommunicable diseases (3). Today, in connection with technology; life expectancy, education and income levels of individuals increased. While these changes facilitated the control of infectious diseases, they led to an increase in the prevalence of chronic and cognitive diseases. Especially obesity; In addition to chronic diseases such as diabetes, cancer, cardiovascular diseases, chronic respiratory diseases, excessive and malnutrition are among the factors that threaten health (4).

[1] This research was produced from the master thesis "Evaluation Of The Relationship Between Mediterranean Diet Score and Nutritional Status and Body Composition in Adult Individuals" under the consultancy of the author (Mehmet Akman).

Optimal health can be achieved with adequate and balanced nutrition. Unhealthy lifestyle causes chronic diseases such as obesity and diabetes. It is not enough to only eat something for nutrition, but sufficient and balanced nutrition practices should be adopted to protect health. Thus, sufficient and balanced intake of macro and micro nutrients is ensured. Nutrition for a single food or a food group is also prevented. Considering these factors, it can be thought that MD supports adequate and balanced nutrition (5,6).

Compared to the diet of many Mediterranean basin inhabitants 45 years ago, MD adaptation has decreased today (3). Although our country is a Mediterranean country, it has started to adopt a western style nutrition model by moving away from the Mediterranean type of diet with its changed eating habits. There is less consumption of bread, milk and dairy products, vegetables and fruits than before. It is observed that the consumption of legumes, eggs, oil and sugar increased. There is an increase in fast-food diet especially among young people (7). Therefore, unhealthy nutrition is considered as an important public health problem. Many activities, programs and plans are organized to reduce the social and moral health burden of chronic diseases. In this context, recommended amounts of food consumption should be provided for each food group according to age, gender and physiological condition. The society should adopt an adequate and balanced diet including limiting total fat and saturated fat intake, providing dietary fat from unsaturated fat, increasing pulp intake, reducing sugar and salt consumption, and a nutritional model that will protect against chronic disease risk factors.

The flow of the article is as follows; In the second part, there is the material and method of the article. Work flow diagram, data collection, demographic information table and statistical analysis are mentioned. The results are given in the 3rd section, and the interpretation of the results in the 4th and 5th sections.

Materials and Methods

The study is designed as follows. Firstly, after the preliminary assessment of the people applying to the counseling unit, individuals who meet the conditions and volunteers were determined. Then, demographic information, anthropometric measurements, Mediterranean Diet Scoring Scale, food consumption frequency questionnaires and 24-hour retrospective food consumption record questionnaires were applied. Information was recorded by face to face interview. The interview was concluded by giving healthy nutrition training to the individuals. Then, the study was completed by making the necessary analyzes and creating the results.

Collection of Data

The study was carried out using records collected from individuals aged 18-64 who applied to Sakarya University Healthy Nutrition / Obesity Counseling Unit between September 2019 and February 2020. Study exclusion criteria; Using any electronic (pacemaker, etc.) or non-electronic (leg prosthesis, etc.) medical implants, being pregnant and having a problem that prevents communication. The minimum number of samples calculated using the appropriate formula was found to be 307. Voluntary consent forms were obtained from 307 individuals who were included in the sample and met the inclusion criteria. Then, questionnaires and scales were applied and recorded. TANITA BC 601 device was used for body analysis. The height was measured with a wall-based height gauge with bare feet and without support, with the head on the Frankfurt plane (the eye triangle and the top of the auricle are aligned parallel to the ground) (8).

The adaptation, validity and reliability of the Mediterranean Diet Adherence Scale, which is used for the Mediterranean Diet Compliance Scoring (MDS), has been done previously (9). In the Mediterranean Diet Commitment Scale, consumption habits of foods characteristic of MD were questioned in 2 questions, and food consumption frequencies were questioned in 12 questions. For each question, 0 or 1 point can be obtained. The total MDS taken varies between 0-14. MDS 5 and below 5 are classified as low compliance, 6-9 as medium level of compliance, and 10 and above as high compliance group. According to the answers given by the individuals, MDS was calculated and classified into 3 groups. However, the number of individuals in the high MDS group was

found to be only 4. In order to increase the accuracy of the analysis, individuals in the high MDS group were included in the middle MDS group.

In the study, the daily food consumption of the individuals was determined with the 24-hour retrospective reminder method using the food consumption record form. Using the food and food photo catalog, all the foods and drinks consumed by all individuals one day (24 hours) before were questioned in terms of time (10).

The foods consumed for a day, obtained through food consumption record, were processed into the 8th version of the Computer Aided Nutrition Program Nutrition Information System (BEBİS) program, and the macro and micronutrients consumed by individuals and their energy amounts were determined from there (11). The average food consumption of individuals was determined by comparing the frequency and amount of food consumption and the 24-hour food consumption record results. These obtained data are taken as a reference for the reliable intake levels recommended in TUBER (1).

In the study, in order to determine the nutritional status, individuals were asked about the amounts (g, ml) and their frequency of food and beverages consumed at one time (never, once a month, 1 time in 15 days, 1-2 times a week, 3-4 times a week, 5-6 times a week, every day, every meal), taking into account a one-year period retrospectively. The quantities of food and beverages were determined using the "Food and Food Photo Catalog: Measures and Amounts" (10).

Statistical analysis

Statistical Package for the Social Sciences (SPSS) was used for statistical analysis. For statistical analysis, firstly, the normality of the data was determined by applying Levene's test to the data. In accordance with the hypotheses and normality of the data, parametric or nonparametric tests were preferred. Percentage, number, average, standard deviation and lower and upper values were used according to the analysis made in the presentation of the data. Food consumption records were evaluated with the help of BEBIS. Independent Sample t-Test and Chi-square were used to determine whether there was a significant difference between the averages. Results were considered significant at $p < 0.05$.

Results

The demographic information and anthropometric measurement data of the individuals whose data were collected are summarized in Table 1.

The average age of the individuals participating in the study is 24.7± 8.3 years for men and 24±7.1 years for women ($p > 0.05$).

Evaluation of the daily nutrient intake of individuals according to MDS groups, analysis results for individuals are given in Table 2 as average, standard deviation and lower-upper values.

In the analyzes performed for men, women and all individuals, a significant difference was found in most of the daily intake of macro and micronutrients compared to MDS groups ($p < 0.05$) (Table 2).

The results of the analysis of the daily food consumption amount of the food groups of the individuals according to the MDS groups are shown in Table 3.

Individuals' food consumption varies as MDS increases. The consumption of milk and dairy products, fish, legumes, olive oil, oily seeds, vegetables and soft drinks increased. This increase in vegetable and olive oil was found to be statistically significant ($p < 0.05$). Red meat, chicken / turkey meat, bread and grain, fruit, fat and sugar consumption decreased. This decrease in the bread and grain group and sugar was found to be statistically significant ($p < 0.05$) (Table 3).

Discussion

In this study, the daily nutrient intake of MDS groups and gender-based individuals according to MDS groups and the daily food consumption amounts of the food groups according to the MDS groups of all individuals were examined.

In a similar study by Fung et al. (12), low, medium and high MDS groups in male individuals were 1753±2,1, 1946±2,2 and 2270±2,4, respectively. In women, these values are 1514±1,1, 1740±1,2 and 2004±1,1. In another similar study, the daily energy

Table 1. Demographic information according to the gender of the individuals and the average, standard deviation and lower-upper values of the anthropometric measurements of the individuals

Age (year) ($\bar{x}$±SD)	**Male**		**Female**		**Total**		X^2	p **0,422**[a]
	(n = 147) $\bar{x}$ ± SD 24,7 ± 8,3		**(n = 160) $\bar{x}$ ± SD 24 ± 7,1**		**(n=307) $\bar{x}$ ± SD 24,4 ± 7,7**			
Marital status	**n**	**%**	**n**	**%**	**n**	**%**		
Married	20	13,6	21	13,1	38	12,5	0,152	0,696[b]
Single	127	86,4	139	86,9	266	87,5		
Education Status	**n**	**%**	**n**	**%**	**n**	**%**		
Secondary school graduate	0	0,0	1	0,6	1	0,3	4,396	0,494[b]
High school graduate	119	81,0	129	80,6	248	80,8		
Associate Degree	4	2,7	5	3,1	9	2,9		
Bachelor's Degree	15	10,2	18	11,3	33	10,7		
Master's Degree	7	4,8	7	4,4	14	4,6		
PhD graduate	2	1,4	0	0,0	2	0,7		
Education time (year) ($\bar{x}$ ± SD)	**$\bar{x}$ ± SD 15,8±2,2**		**$\bar{x}$ ± SD 15,6±2,1**		**$\bar{x}$ ± SD 15,7±2,1**			**0,399**[a]
Profession	**n**	**%**	**n**	**%**	**n**	**%**		
Official	11	7,48	17	10,6	28	9,1	10,11	0,120[b]
Worker	3	2	2	1,3	5	1,6		
Academician	9	6,1	6	3,8	15	4,9		
Student	122	83	127	79,4	249	81,1		
Engineer	1	0,7	5	3,1	6	2,0		
Housewife	0	0	3	1,9	3	1,0		
Financial advisor	1	0,7	0	0	1	0,3		
Anthropometric Measurements	**$\bar{x}$ ± SD**		**$\bar{x}$ ± SD**		**$\bar{x}$ ± SD**			
Weight (kg)	78,4±14,9		62,1±11,8		69,9±15,7			0,000[a]
Height (cm)	175,3±6,9		162,4±6,2		168,6±9,2			0,000[a]
BMI (kg/m2)	25,5±4,6		23,6±4,4		24,5±4,6			0,000[a]

[a] Two independent samples t test, [b] Chi-square test, c More than one option was marked

intake of individuals according to low, medium and high MDS groups were 2231±624, 2396±623 and 2524±588 kcal (13). As the MDS score increases, the daily energy intake of individuals decreases (Table 2) (p <0.05). Compared to the literature, in this study, it was found that the daily energy intake of men and women was higher. Most of the studies in the literature use a retrospective 24-hour food consumption recording method while calculating the daily macro and micronutrients of individuals. In this recording method, it is thought that individuals may report less or more of the type and amount of food they consume daily due to reasons such as embarrassment or forgetting (14). In this study, a calculation was made by questioning the past 1-year food consumption. Some differences between the literature and this study may be due to the difference in the calculation method.

According to the low and medium MDS groups, the average percentage of daily energy intake from carbohydrate and protein is within normal limits compared to TUBER 2015 (Table 2). The average fat percentage is above the reliable intake level in the low MDS group (Table 2). However, MD recommends fat intake between 30-40%. According to MD, fat

Table2. Evaluation of daily nutrient intake of individuals according to Mediterranean diet score groups

	For all individuals					For female individuals					For male individuals				
	MDS≤5 (Low) (n=177)		6≤MDS<10 (Medium) (n=130)			MDS≤5 (Low) (n=85)		6≤MDS<10 (Medium) (n=75)			MDS≤5 (Low) (n=92)		6≤MDS<10 (Medium) (n=55)		
Nutrient Intake	**x±SD**	**Lower-Upper**	**x±SD**	**Lower-Upper**	***p*[a]**	**x±SD**	**Lower-Upper**	**x±SD**	**Lower-Upper**	***p*[a]**	**x±SD**	**Lower-Upper**	**x±SD**	**Lower-Upper**	***p*[a]**
Energy (kcal)	2138,2±852,7	781-5396,2	1825,2±630,9	648,8-3908,2	0	1795,6±597,9	780,97-4249,53	1604,6±423,8	648,8-2804,7	0,02	2454,7±930,3	958,5-5396,2	2126±738,2	792-3908,2	0,027
Energy (kcal/kg)	31,1±11,7	10,1-75,6	26,7±8,9	10,2-60,6	0	29,9±10,4	11,71-75,05	26,1±7,4	10,2-42,1	0,011	32,2±12,8	10,1-75,6	27,6±10,6	10,4-60,5	0,026
Carbohydrate (g)	249,6±105,7	87,5-598,5	200,6±81	62-527,2	0	210,3±76,4	87,54-510,82	173,1±57,1	62-352,6	0,001	286±115,9	97,6-598,5	238,2±93,4	73,3-527,2	0,007
Carbohydrate (%)	47,7±7,9	26-72	44,8±8,8	21-67	0,002	47,9±7,3	26-72	44,1±8,4	21-65	0,003	47,6±8,4	29-70	45,7±9,3	23-67	0,205
Protein (g)	83,3±38,8	22,9-261,3	78,4±30,9	33,3-201,11	0,22	67,4±24,5	22,92-139,75	64,8±18	33,3-115,7	0,444	97,9±43,6	23,7-261,3	96,9±35,2	39,8-201,1	0,879
Protein (g/kg)	1,2±0,5	0,3-3,6	1,1±0,4	0,5-2,9	0,278	1,1±0,4	0,44-2,11	1±0,3	0,5-1,8	0,292	1,3±0,6	0,3-3,6	1,3±0,5	0,5-2,9	0,822
Protein (%)	16±4,1	8-39	17,8±4,1	10-34	0	15,6±4,1	8-28	16,8±3,5	10-26	0,046	16,4±4,1	8-39	19,1±4,5	11-34	0
Plant Protein (g)	2,7±3,2	0-22,9	3,1±2,9	0-15,7	0,195	2,2±2,2	0-12,31	2,6±2,8	0-15,6	0,294	3,1±3,8	0,1-22,9	3,8±2,9	0,3-12,4	0,233
Fat (g)	26,6±38	1-173,7	22,4±31,9	1-147	0,293	17±24,2	1-85,91	15,2±24,2	2-95,5	0,638	35,4±45,8	1-173,7	32,1±38,3	1-147	0,655
Fat (%)	36±7,2	16-59	37,2±7,6	20-57	0,17	36,3±5,9	19-52	39±7,3	21-57	0,013	35,8±8,2	16-59	34,8±7,4	20-52	0,468
Fiber (g)	23,1±9,7	7,1-70,7	23,8±7,9	7,8-46,3	0,481	20±7,3	7,12-44,37	22,4±6,8	7,7-42,8	0,031	26±10,7	8,7-70,7	25,8±8,9	10,8-46,3	0,902
PUFA (g)	19,6±12,2	4,6-92	15,4±7,5	4,1-34,8	0	15,7±7,5	4,76-46,66	14,9±6,6	5,1-33,5	0,516	23,3±14,5	4,6-92	16,2±8,5	4,1-34,7	0
PUFA (%)	8,1±3,3	3-27,7	7,6±2,6	2,8-18	0,12	7,8±2,2	3,9-13,94	8,3±2,8	3,9-18	0,226	8,5±4	3-27,7	6,7±2,2	2,8-12,1	0,001
MSFA (g)	30,9±14,3	7,9-74,7	29,2±12,9	8,5-76,5	0,289	26,3±10,6	7,94-61,37	27,1±10,6	9,9-53,4	0,627	35,2±15,8	8,7-74,7	32,2±15,2	8,5-76,5	0,254
MSFA (%)	12,9±3,1	5,1-24,6	14,4±4,1	6,7-29,8	0,001	13±2,9	7,45-24,55	15,1±4,4	7-29,8	0,001	12,9±3,3	5,1-23	13,4±3,6	6,6-23,9	0,385
SFA (g)	30,5±13,6	6,8-71,3	26,5±11,6	8,3-70,8	0,007	27±10,9	6,75-57,08	23,8±8,6	8,3-46,1	0,048	33,8±15	8,3-71,3	30,2±14	10,4-70,8	0,141
SFA (%)	12,8±3,1	4,6-28,7	13±3,2	5,7-22,5	0,661	13,4±2,8	6,71-21,14	13,3±3,2	5,7-22,5	0,877	12,4±3,2	4,6-28,7	12,6±3,2	6,2-20,4	0,652
Cholesterol (mg)	367,6±236,3	32,6-1444,5	348,7±225,6	59,4-1328,2	0,481	290,4±201,9	32,58-932,65	264,3±148,3	59,4-750,5	0,351	439±244,2	84,5-1444,5	463,8±260,9	120,7-1328,2	0,563
A vitamin (µg)	1428,1±1475,9	137,1-17568,4	1537,3±1052,5	279,1-6718,7	0,473	1152,7±844,6	137,08-4646,21	1311,4±797,2	279,1-5522,7	0,225	1682,6±1848,8	248,8-17568,4	1845,2±1268,1	382,4-6718,6	0,566
Carotene (mg)	3,7±2,8	0,3-14,7	4,6±3,2	0,5-18,7	0,009	3,5±2,5	0,25-13,89	4,5±2,9	0,9-18,7	0,023	4±3	0,5-14,7	4,9±3,7	0,5-18,4	0,104
E vitamin (mg)	19±11,6	3,8-101,5	16,7±7,3	4,4-42,4	0,033	15,5±7,2	3,78-40,16	16,8±6,9	5,2-42,4	0,268	22,2±13,7	4,3-101,5	16,6±7,9	4,4-37,1	0,002
B1 vitamin (mg)	1,1±0,5	0,3-3,1	1,1±0,4	0,4-2,4	0,908	1±0,3	0,3-1,96	1±0,3	0,4-1,9	0,26	1,3±0,5	0,4-3,1	1,3±0,4	0,5-2,4	0,954
B2 vitamin (mg)	1,6±0,7	0,3-5,8	1,6±0,5	0,6-3,2	0,723	1,4±0,5	0,28-2,68	1,4±0,4	0,6-2,7	0,867	1,8±0,8	0,6-5,8	1,9±0,6	0,7-3,2	0,702
Niacin (mg)	33,2±15,9	6,7-105,7	32,4±13,1	12,7-88	0,613	26,9±10	6,73-58,58	27,4±8,3	12,7-55,1	0,704	39,1±18,1	9,1-105,7	39,1±15,4	14,5-88	0,999
B6 vitamin (mg)	1,6±0,7	0,3-4,4	1,6±0,6	0,6-3,38	0,748	1,3±0,5	0,26-2,92	1,5±0,5	0,6-3,4	0,281	1,8±0,8	0,5-4,4	1,8±0,6	0,6-3,2	0,798
B12 vitamin (µg)	5,9±5,9	0,2-68,3	5,5±4,0	0,5-24,9	0,433	4,6±3,3	0,15-17,22	4,1±2,7	0,5-15,9	0,329	7,2±7,3	1,1-68,3	7,3±4,6	1,7-24,9	0,914
Folic acid (µg)	9,3±9,4	0-60,1	10,9±8,7	0,7-52,8	0,066	7,9±7,6	0-51,27	9,4±9,1	0,7-52,9	0,013	10,6±10,7	1,2-60,1	12,8±7,8	2,1-33,4	0,282
C vitamin (mg)	138,7±86,7	23,9-825,2	163,2±92,6	38,3-581,5	0,018	129,7±70,6	27,46-383,53	159,1±80,1	38,3-487	0,015	147±99	23,9-825,2	168,8±107,8	39,9-581,5	0,215
K vitamin (µg)	115,3±78,2	10,7-603,9	178,3±159,3	40,2-1103,7	0	108,7±79,3	10,73-603,89	169,6±117,7	40,2-636,1	0	121,5±77	30,8-410,2	190,2±203,5	44,5-1103,7	0,019
Sodium *(mg)	2111,9±1135,9	482,6-7388,8	1792,3±864,8	324,0-5326,9	0,005	1715±794	482,58-4747,79	1591,7±672,3	324-3083,8	0,294	2478,7±1277	587,4-7388,8	2065,9±1017,3	604-5326,9	0,043

Table2. (Continued)

	For all individuals					For female individuals					For male individuals				
	MDS≤5 (Low) (n=177)		6≤MDS<10 (Medium) (n=130)			MDS≤5 (Low) (n=85)		6≤MDS<10 (Medium) (n=75)			MDS≤5 (Low) (n=92)		6≤MDS<10 (Medium) (n=55)		
Nutrient Intake	**x±SD**	**Lower-Upper**	**x±SD**	**Lower-Upper**	***p*[a]**	**x±SD**	**Lower-Upper**	**x±SD**	**Lower-Upper**	***p*[a]**	**x±SD**	**Lower-Upper**	**x±SD**	**Lower-Upper**	***p*[a]**
Potassium (mg)	3046±1180,6	769,9-8283,3	3052,2±892,4	1342,8-5646,3	0,958	2719,3±922,2	769,86-5402,06	2881,4±770,9	1391,5-5367,1	0,233	3347,9±1311,1	974,2-8283,3	3285,2±996,2	1342,8-5646,3	0,76
Calcium (mg)	804,1±341,5	229-2369,5	794,8±285,1	306,4-1982,2	0,8	717,6±251,9	245,4-1628,07	754,2±244,9	306,4-1280,7	0,354	884±391,9	229-2369,5	850,1±326,5	349,3-1982,2	0,59
Magnesium (mg)	326,9±136,8	89,6-856,7	321±105,2	141,0-707,8	0,673	278,3±93,4	89,55-629,85	292,9±74,9	141-459	0,279	371,8±154,6	98,3-856,7	359,4±127,2	162,1-707,8	0,617
Iron (mg)	11,6±4,8	3,2-29,2	11,2±3,7	4-24,1	0,415	10±3,4	3,16-18,67	9,9±2,4	4-14,7	0,895	13,2±5,3	4,6-29,2	13,1±4,3	4,7-24,1	0,909
Zinc (mg)	11,4±5,3	2,1-34,2	10,80431±4,1	4,3-25,3	0,267	9,4±3,4	2,09-18,5	9±2,7	4,3-16,5	0,51	13,3±6	3-34,2	13,2±4,5	5-25,3	0,886
Phosphorus (mg)	1261±537,1	297-3341,5	1213,2±416,4	552,5-3222,9	0,381	1062,1±358,9	296,98-2164,25	1059,1±270,3	552,5-1625,5	0,954	1444,7±606,6	382,5-3341,5	1423,2±485,9	574,6-3222,9	0,824
B5 vitamin (mg)	6,7±2,7	1,9-17,9	6,5±2,2	2,5-13,5	0,558	5,7±1,9	1,88-10,72	5,8±1,5	2,5-11,2	0,81	7,7±2,9	2,7-17,9	7,6±2,4	2,7-13,5	0,944
Manganese (mg)	9,8±9,3	1,4-64,3	10,3±9,6	1,8-55,1	0,632	8±7,2	1,39-51,96	9,8±10,3	1,8-55,1	0,196	11,4±10,6	2,2-64,3	10,9±8,6	2,9-41,8	0,791
D vitamin (μg)	3,9±4	0,3-29,8	4±3,9	0,5-28,9	0,884	3,3±4,1	0,26-29,83	3,7±4,4	0,5-28,9	0,602	4,4±3,9	0,3-21,2	4,3±3,1	0,6-17,8	0,894
Copper	1,8±0,8	0,7-6,1	1,7±0,6	0,7-4,0	0,285	1,5±0,6	0,68-3,45	1,6±0,5	0,73-2,9	0,73	2±0,9	0,8-6,1	1,9±0,7	0,7-4	0,389
EPA	0,1±0,1	0-0,8	0,1±0,2	0-1,24	0,429	0,1±0,1	0-0,62	0,1±0,2	0-1,2	0,476	0,1±0,1	0-0,8	0,1±0,2	0-1,2	0,521
DHA	0,2±0,3	0-2,1	0,2±0,5	0-3,4	0,434	0,2±0,2	0,02-1,67	0,2±0,4	0-3,3	0,517	0,2±0,3	0-2,1	0,3±0,5	0-3,3	0,473

[a] Two independent samples t test, * 4 individuals in the high MDS group were included in the middle MDS group.

Table 3. Evaluation of daily food consumption amounts of food groups according to Mediterranean diet score groups of individuals

MDS Groups	**MDS≤5 (Low) (n=177)**						**6≤MDS≤10 (Medium)* (n=126)**						
Food Groups (g)	**x̄**	**±**	**SD**	**Lower**	**-**	**Upper**	**x̄**	**±**	**SD**	**Lower**	**-**	**Upper**	***p*[a]**
Milk and Dairy Products	248,1	±	168,8	8	-	1002	251,5	±	143,4	8	-	867	0,85
Meat/ Egg/Legumes	217,1	±	142,5	26	-	1000	209,1	±	132	60	-	815	0,62
Red Meat	119,5	±	106,1	0	-	720	102,7	±	91,22	0	-	666	0,15
Chicken/Turkey	63,47	±	69,61	0	-	414	57,03	±	70,09	0	-	503	0,43
Fish	10,64	±	19,8	0	-	151	11,72	±	20,81	0	-	151	0,64
Egg	48,11	±	46,62	0	-	188	48,34	±	43,73	1	-	251	0,97
Legumes	12,58	±	14,66	0	-	112	15,55	±	13,05	1	-	63	0,07
Bread and Grains	326,2	±	171,5	47	-	1174	244,2	±	139	25	-	641	0
Fruit	260,5	±	169,4	8	-	1026	239,2	±	163,6	53	-	1217	0,27
Vegetable	190,6	±	135,2	0	-	608	239,8	±	140,3	16	-	778	0
Oils	27,57	±	21,29	0	-	154	22,12	±	14,92	0	-	63	0,01
Olive oil	3,8	±	6,22	0	-	25	7,13	±	9,66	0	-	50	0
Oily Seeds	18,19	±	19,09	0	-	99	23,27	±	21,78	0	-	110	0,03
Sugar	39,45	±	30,92	0	-	144	24,86	±	29,1	0	-	160	0
Soft drinks	495,3	±	556	0	-	3944	503,5	±	575,9	2	-	4025	0,9
Alcoholic drinks	8,95	±	37,49	0	-	344	5,08	±	15,35	0	-	86	0,22

[a] Two independent samples t test, * 4 individuals in the high MDS group were included in the middle MDS group.

consumption of individuals can be considered normal. According to the low and medium MDS groups, the percentage of daily energy intake from carbohydrates increased as the MDS increased ($p < 0.05$). Percentages of energy from protein and fat from fat decreased as MDS increased ($p < 0.05$). The percentage of energy from fat for women in the low and medium MDS groups was higher than their reliable intake level. According to MD in Table 2, oil amounts are within normal limits.

In the study conducted by Romaguera et al. (15), the percentages of daily energy intake from carbohydrates of men with low, medium and high MDS were 42±8, 43±7 and 44,7, respectively. While these values for protein are 16±3, 16±3 and 15±3, respectively, it is 37±7, 36±6, 35±6 for fat. In the same study, the percentages of daily energy intake of women with low, medium and high MDS from carbohydrates were 44±7, 45±7 and 45±7, respectively. These values are 17±3, 17±3 and 16±3 for protein, 37±6, 36±6 and 35±6 for fat, respectively. In another study, the percentages of energy from carbohydrates of individuals with low, medium and high MDS were 42,8±5.7, 42,2±6,2 and 41,9±5,9, respectively. These values for protein are 17,3±2,6, 17,7±2,8, and 17,8±2,6, respectively, while for fat it is 39,9±4,8, 40,1±5,3, and 40,3±5,2 (15). While the percentage of daily energy intake from carbohydrates decreases as MDS increases, this is the opposite for protein (Table 2). When the literature and the data in this study are compared, the rate of carbohydrate is high, and the ratio of protein and fat is lower. The reason for this may be due to differences in working age groups and the method used.

Percentages of daily energy intake of men, women and all individuals from PUFA, MSFA and SFA according to low and medium MDS groups are shown in Table 2. In similar studies, the percentages of the daily energy intake of individuals from the PUFA are lower compared to low, medium and high MDS groups and approximately 5±2, 5±2 and 5±2, respectively (13). MSFA values are also the same in both studies and are 16±4, 16±4 and 15±4, respectively. SFA is also close and is approximately 13±3, 11±3 and 10±2. The PUFA value obtained in this study is high compared

to the literature, and the MSFA value is low and SFA is similar. According to TUBER 2015, the rate of daily energy taken from SFA should be below 7-8%. In this study, this value is higher than the reliable intake level in all three groups. Fatty acid type is more important than the amount of fat taken in MD type nutrition. Even if the SFA value decreases as MDS increases, it is above 7-8%. This rate can be explained by the low number of people in the high MDS group. PUFA and MSFA are at reliable level.

In the study by Buenza et al. (13), fiber consumption amounts to low, medium and high MDS groups were 20±8, 27±10 and 36±13g, respectively. In another study, these values were given as 25±10, 33±13, and 40±15, respectively (5). Daily fiber consumption amounts of men, women and all individuals according to low and medium MDS groups are as in Table 2. Considering the studies in the literature, as the MDS increases, the amount of fiber consumption does not change. This is thought to be due to the low number of individuals with high MDS among the participants. When the reliable intake level for TUBER 2015 fiber consumption amount is compared with this study, it was determined that the amount of fiber consumption was below the reliable intake level but close to the limit (1). It was found that the amount of fiber consumption was higher in men than in women. This may be due to the higher consumption of vegetables, fruits and oilseeds in men compared to women, as indicated in the table in Table 3.

The relationship between daily vitamin C consumption and MDS groups was found to be statistically significant (Table 2) ($p < 0.05$). It is thought that as MDS increases in all individuals, the amount of daily vitamin C consumption will increase with the increase in the amount of fruit and vegetable consumption. In a study compared with the literature, the daily intake of vitamin C by all individuals according to the low, medium and high MDS groups were 85,9±40, 95,1±44,3 and 105,9±46,7 mg, respectively (16). The results obtained in this study are higher than the literature. According to TUBER 2015, daily vitamin C consumption was found above the safe intake level in all groups (1).

In the study of Azzini et al., The daily consumption of milk and dairy products in low, medium and high AES groups were found to be 305 ± 160, 227 ± 128 and 195 ± 170, respectively (17). It is not compatible with the amounts of milk and dairy products obtained in this study (Table 3). In MD-type nutrition, consumption of low-fat milk and dairy products is recommended for two portions or less per day (5, 18).

Daily consumption amounts for red meat, fish, chicken and turkey meat are as in Table 3. Azzini et al. 161±112, 119±65,114±90 for meat, 39±40, 61±62 and 88±96 for fish (16). It is recommended that red meat consumption should be preferred less than white meat in MD-type diet (17). However, this study found that individuals consume more red meat. The daily consumption of chicken and turkey meat was higher in the low MDS group. The amount of fish consumption was found to be lower than the study of Azzini et al. (17).

In the literature, daily consumption of legumes is 7±19, 18±27 and 22±23 g, respectively (16). Legumes consumption is less in this sample. In this study, when the daily consumption of legumes was compared with MDS groups, high consumption was found in the middle MDS group. This study is not similar when compared with the literature.

In a study, individuals' vegetable consumption according to ADS groups was 167 ± 113, 225 ± 127 and 261 ± 97 g, respectively (17). In this study, it was found that vegetable consumption was lower in the low MDS group, as expected, when the daily consumption of vegetables was compared with the MDS groups ($p<0.05$) (Table 3). Azzini et al. found fruit consumption primary 162 ± 162 g, 209 ± 188 g, and 389 ± 238 g according to low, medium and high ADS groups (17). In another study, the daily fruit consumption amounts, respectively; It is 292, 404 and 589 g (19). In this study, when the daily consumption of MDS groups and fruits are compared, it is seen that there is lower fruit consumption in the middle MDS group ($p>0.05$) (Table 3). This study is not similar to the literature in terms of daily fruit consumption. This may be due to the absence of the high MDS group in the study. In the studies in the literature, it is seen that the difference is more especially in the low and high MDS groups.

In the low MDS group, the food group that contributes the most to energy is bread. Then from high

to low, respectively; group of fruits, milk and dairy products and meat, eggs and legumes. In the middle MDS group, the food group that contributes the most to energy is milk and dairy products. Then from high to low, respectively; bread and grains, fruit and meat, eggs and legumes.

In a study, the daily olive oil consumption amounts of individuals according to low, medium and high MDS groups were; 20±17, 25±20 and 29±17 g. In this study, the amount of olive oil consumption was found to be lower than the MDS groups compared to the literature (Table 3). This may be due to the fact that most of the individuals participating in the study were students. In addition, olive oil consumption was higher in the middle MDS group in this study. This difference between MDS groups is statistically significant ($p < 0.05$). In addition to all these, as expected, the amount of refined sugar consumption decreases as MD compliance increases ($p < 0.05$).

In this study, in order to determine the nutritional status of individuals, a 24-hour food consumption record and the frequency of food consumption that evaluated the last year were used. In literature studies, only 24-hour food consumption recording method was used. Especially in the 24-hour food consumption recording method, it is thought that individuals may report less or more of the type and amount of food they consume daily due to reasons such as embarrassment or forgetting (13). It can be said that the data that are not similar to the literature are caused by the difference in method. In addition, unlike the literature, individuals with high MDS in this study were included in the middle MDS group because of their low number. For this reason, statistics made according to MDS groups may not be consistent with the literature.

Conclusion

Chronic disease risk is increasing day by day in all societies. MD has an important place in prevention and treatment of chronic diseases. However, in recent years, Western type nutrition model has been adopted more than MD type nutrition model. This situation is more common especially in the young age group.

Most of the studies in the literature have carried out their research regardless of gender. However, some macro and micronutrient needs may vary with age and gender. For this reason, conducting gender-based analysis can increase the scientificness of the results obtained. Individuals were younger in this study compared to the literature. In addition, according to the studies in the literature, the number of individuals in the high MDS group in this study is almost negligible. In this case, we can say that individuals move away from healthy life and adopt the western type of diet more in the young adulthood period. In this case, it can be said that in the future, this generation has a higher risk of developing chronic diseases, especially obesity.

MD is a sustainable diet model. Therefore, it can be applied as the key to a healthier and longer life. As a Mediterranean country, MD type nutrition training should be increased for all individuals, especially young adults, in order to increase MD compliance of the society. The importance of olive oil, which is the essential oil source in the Mediterranean diet, should be explained and its use should be encouraged. Individuals should be encouraged to do FA regularly.

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