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Nutrition Literacy Status of the Elderly in Kutahya and Their Attitudes towards Healthy Nutrition

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ABSTRACT

Introduction: Nutritional literacy is defined as the capacity of individuals to access, process and understand basic nutritional information. Although food and nutrition literacy plays an important role in the development of healthy eating behaviours, there are various factors that facilitate and complicate this situation.

Objective: The aim of this study was to evaluate the nutritional literacy levels of individuals aged 60-64 years and their attitudes towards healthy nutrition.

Materials and Method: The study is a descriptive and cross-sectional study. It was conducted in March-June 2022 in family health centres in the central district of Kütahya. The sample of the study consisted of 400 individuals aged 60-64 years living in the city centre of Kütahya. The descriptive Socio-demographic Characteristics Data Form consisting of 17 items, the Nutrition Literacy Assessment Tool for Adults (NLSA), and the Attitudes Towards Healthy Eating Scale (ATHS) were used to collect the data. The data were collected by the researcher using face-to-face interview technique. SPSS 25.0, a statistical package programme, was used for research analyses.

Results: The mean score of the elderly on the scale of nutrition literacy in adults was 20.99±5.325. The mean scores of the sub-dimensions; general nutrition knowledge 6,37±1,887, reading comprehension 3,89±1,118, food groups 7,70±1,538, portion sizes 2,15±0,752, numerical literacy and food label reading 0,87±1,185. The mean score of the attitude scale of the elderly towards healthy nutrition was 71,86±12,85. The mean scores of the sub-dimensions are; knowledge about nutrition 16,61±4,616, emotion towards nutrition 16,79±4,606, positive nutrition 19,39±4,282, bad nutrition 19,08±4,53. It was determined that the scores of participants with normal weight from the scale of nutritional literacy in adults were higher than those of overweight participants. It was observed that there was a positive relationship between Nutrition Literacy in Adults and Attitude towards Healthy Nutrition at a normal level (r=0.528, p<.01).

Conclusion: According to the Attitudes Towards Healthy Nutrition Scale, 61% of the elderly were found to have a high level of attitude towards nutrition. It was observed that 29% of the elderly included in the study had adequate nutritional literacy level and 70.3% of the individuals had limited nutritional literacy.

KEYWORDS: nutrition, nutrition assessment, ageing, elderly

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INTRODUCTION

Health Literacy (HL) has been defined as "the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health." HL is studied under three basic dimensions: Basic/Functional Health Literacy, Communicative/Interactive Health Literacy, Critical Health Literacy (1).Studies indicate that poor self-management and low health literacy are at the core of various health problems and that health literacy should be improved in order to enable patients to exercise self-management (2). Similar to health literacy, nutrition literacy has been defined as the capacity of individuals to access, process and understand basic nutritional information (3). Another definition of nutrition literacy is to produce information about the relationship between food systems and biological, social and ecological systems using language and to communicate this information to the society (4). In addition to literacy skills, individuals need a variety of skills to understand,

evaluate and interpret complex information about food and nutrition and turn such information into healthy dietary practices (5). It is also necessary to have skills such as paying attention to certain properties when purchasing food and having the ability to select, prepare, cook and serve food. In addition, mathematical skills are also needed to understand the nutrients that should be taken daily, portion sizes, energy and nutritional value information on food labels (6).

Although food and nutrition literacy plays an important role in the development of healthy eating habits, there are various factors that facilitate and complicate this situation. These factors need to be investigated in detail and solutions need to be identified for hindering factors (7). Factors such as age, educational level and socioeconomic status can have an impact on an individual's eating habits. Being socially active, living with a spouse, having strong family ties, education, literacy level and having high income are among the factors that positively affect the quality of life in old age (8).

As in the rest of the world, the elderly population is growing in Turkey (9). According to the data from the Turkish Statistical Institute (2020), the proportion of the elderly in the total population of Turkey was 8.2% in 2015 and increased to 9.5% in 2020 (10). Ensuring adequate and balanced nutrition in old age is important for maintaining and improving health, preventing or delaying chronic diseases, prolonging life span and improving quality of life. Nutritional requirements change with aging and the elderly need to be well-nourished in order to lead a quality life. Factors affecting nutrition in the elderly may vary. Factors such as physiological changes that occur with aging, socioeconomic effects, dementia, acute or chronic diseases and the number of medications administered, inadequate nutrient intake in case of illness, loneliness, and difficulty in meeting self-care needs negatively affect the nutrition of elderly individuals. Cardiovascular diseases such as hypertension, ischemic heart disease and heart failure are more common in the elderly and nutrition is important in terms of both morbidity and mortality in such diseases. A healthy diet can reduce the health problems that develop in old age and prolong life span. In order to live this stage of life in a healthy way, it is important to pay attention to the nutrition of elderly individuals (11).

In a study conducted with adults, the researchers found that more than half of the participants had an attitude towards highly healthy nutrition and more than 80% were at a sufficient level in terms of nutrition literacy. It was observed that individuals who were thin and at ideal weight had higher levels of literacy. The researchers concluded that nutrition literacy positively affects healthy eating attitude and body mass index (BMI) (12). We believe that this dissertation study will contribute to the literature since the number of studies on the nutritional literacy levels and eating habits of the elderly in Turkey, where the elderly population is growing steadily, is limited and the issue concerns public health. The purpose of this study is to investigate the nutrition literacy levels of individuals between the ages of 60-64 years and their attitudes towards healthy nutrition.

Research Questions

1. What is the mean Evaluation Instrument of Nutrition Literacy on Adults score of elderly individuals?
2. What is the mean Attitude Scale for Healthy Nutrition score of elderly individuals?
3. Is there a significant difference between the mean Evaluation Instrument of Nutrition Literacy on Adults score and the mean Attitude Scale for Healthy Nutrition score of elderly individuals?

MATERIAL AND METHOD

This study was designed as a descriptive and cross-sectional study. The study was conducted in March-June 2022 in family health centers in the central district of Kütahya. The population of the study was comprised of the total population between the ages of 60 and 64 (10410 people) living in the central district of Kütahya. The sample size was calculated as 371 with a 5% margin of error and 95% confidence interval. However, 400 people who met the inclusion criteria were recruited during the study period and the sample size was set as 400. The calculated sample size was reached by recruiting participants from the family health centers in the central district of Kütahya by the stratified sampling method in the numbers determined (over the total population of family health centers). The Socio-demographic Characteristics Data Form, a descriptive instrument consisting of 17 items prepared by the researcher based on a literature review, the Evaluation Instrument of Nutrition Literacy on Adults (EINLA), and the Attitude Scale for Healthy Nutrition (ASHN) were used for data collection. The data were collected by the researcher using face-to-face interview technique.

The validity and reliability study of the Evaluation Instrument of Nutrition Literacy on Adults was conducted by Cesur, Koçoğlu and Sümer in 2015 (13). The internal consistency coefficient was found to be 0.75. The first section consisting of 10 questions assesses general nutrition knowledge. The second section includes 6 questions measuring reading comprehension and interpretation skills. The third section includes 10 questions related to food groups. The fourth section consists of 3 questions measuring the level of knowledge about portion sizes. The fifth section consists of 6 questions assessing the ability to read food labels and basic computational skills. Each correct answer is awarded one point and an incorrect answer or a blank answer is awarded zero points. A total instrument score between 0-11 is considered inadequate, between 12-23 is considered borderline, and between 24-35 is considered adequate. The Attitude Scale for Healthy Nutrition (ASHN) was developed by Tekkurşun, Demir and Cicioğlu in 2019 (14). The ASHN consists of 21 items and 4 factors; Information on Nutrition (IN), Emotion for Nutrition (EN), Positive Nutrition (PN), and Malnutrition (MN). The minimum scale score is 21 and

the maximum score is 105. A score of 21 is considered very low, 23-42 low, 43-63 moderate, 64-84 high, and 85-105 very high, indicating that the respondent has a healthy attitude towards nutrition.

The statistical package program SPSS 25.0 was used for data analysis. Frequency and percentage values were used for demographic information and other general informative questions in data analysis. The Cronbach's Alpha values were calculated for the reliability analysis of the instruments. The reliability coefficients were found to be 0.847 for the EINLA and 0.880 for the ASHN. These values indicate that the scales have high reliability. Parametric tests were used to analyze the data since the scales showed normal distribution. Independent sample t test was used to compare the means of two independent groups and one-way analysis of variance (ANOVA) was used to compare more than two independent groups. Since homogeneity of variance was ensured in the Post Hoc technique for determining group differences in the ANOVA, Tukey and Scheffe tests were applied. Pearson's Correlation analysis was applied to determine the relationship between the two scales. The results were evaluated at 95% confidence interval and at a significance level of $p<.05$. The approval for the study was granted by the XXX (Decision No: XXX). Each participant who agreed to participate in the study signed an "Informed Consent Form".

FINDINGS

62.7% (n=251) of the participants were male and 37.3% (n=149) were female with a mean age of 62.2±1.4 years. 44.3% of the elderly had a normal body mass index and 49.5% had a slightly overweight body mass index. 71.8% of the participants were married, 51.7% were unemployed, 27.5% were retired and 45% were primary school graduates. In terms of the living situation of the participants, 24% (n=96) were living alone, 74.3% (n=297) were living with their families and 1.8% (n=7) were living in a nursing home. 47.8% of the elderly were smokers, 52.3% were non-smokers and 91.5% did not consume alcohol. 39.8% (n=159) of the elderly had multiple chronic diseases and 33.8% (n=135) had only one chronic disease. Only 32.5% of the participants followed a disease-specific diet. The rate of elderly who ate 3 main meals a day was 78.5% (n=314). 73% (n=292) of the participants stated that they did not eat snacks between meals. Regarding their consumption of packaged food, 47.5% (n=190) answered "Yes" and 52.5% (n=210) answered "No". In terms of reading the labels of the food they buy, 35.5% (n=142) answered "Yes" and 64.5% (n=258) answered "No". 76.8% (n=307) of the elderly did not read nutritional labels on food packages. 86.3% (n=345) of the elderly did not exercise on a regular basis (Table 1).

Table 1. Certain Descriptive Characteristics of the Participants

General Information	Number (n)	Percentage (%)
Gender		
Male	251	62.7
Female	149	37.3
BMI		
Normal	177	44.3
Slightly Overweight	198	49.5
Obese	25	6.3
Marital Status		
Married	287	71.8
Single	113	28.2
Employment Status		
Employed	83	20.8
Unemployed	207	51.7
Retired	110	27.5
Educational Level		
Primary school	180	45.0
Secondary school	113	28.2
High school	87	21.8
University and above	20	5.0
Living Situation		
Alone	96	24.0
With family	297	74.3
Nursing home	7	1.8
Smoking Status		
Yes	191	47.8
No	209	52.3
Alcohol Consumption		
Yes	34	8.5
No	366	91.5
Chronic Disease		
Yes	159	39.8

No	241	60.3
Number of Chronic Diseases		
No chronic disease	241	60.3
One chronic disease	135	33.8
Multiple chronic diseases	24	6,0
Chronic Disease-specific Diet		
Yes	130	32.5
No	270	67.5
Main Meals		
Yes	314	78.5
No	86	21.5
Snacking		
Yes	108	27.0
No	292	73.0
Packaged Food Consumption		
Yes	190	47.5
No	210	52.5
Reading Food Labels		
Yes	142	35.5
No	258	64.5
Reading Nutritional Information		
Yes	93	23.3
No	307	76.8
Exercise		
Yes	55	13.8
No	345	86.3
Total	**400**	**100**

The scores obtained by the elderly from the EINLA ranged between 10 and 35, with a mean score of 20.99±5.325. The mean score in the general nutrition knowledge subscale was 6.37±1.887, the mean score in the reading comprehension subscale was 3.89±1.118, the mean score in the food groups subscale was 7.70±1.538, the mean score in the portion sizes subscale was 2.15±0.752, and the mean score in the computational skills and ability to read food labels subscale was 0.87±1.185 (Table 2).

Table 2. Mean Evaluation Instrument of Nutrition Literacy on Adults and Subdimension Scores

	Lowest	Highest	Mean ± Standard Deviation
Evaluation Instrument of Nutrition Literacy on Adults	10	35	20.99±5.325
General Nutrition Knowledge	2	10	6.37±1.887
Reading Comprehension	1	6	3.89±1.118
Food Groups	2	10	7.70±1.538
Portion Sizes	0	4	2.15±.752
Computational Skills and Ability to Read Food Labels	0	6	.87±1.185

The scores obtained by the elderly in the ASHN ranged between 24 and 103, with a mean score of 71.86±12.850. The mean score in the information on nutrition subscale was 16.61±4.616, the mean score in the emotion for nutrition subscale was 16.79±4.606, the mean score in the positive nutrition subscale was 19.39±4.282, and the mean score in the malnutrition subscale was 19.08±4.530 (Table 3).

Table 3. Mean Attitude Scale for Healthy Nutrition and Subscale Scores

	Lowest	Highest	Mean ± Standard Deviation
Attitude Scale for Healthy Nutrition	24	103	71.86±12.850
Information on Nutrition	7	25	16.61±4.616
Emotion for Nutrition	6	27	16.79±4.406
Positive Nutrition	5	58	19.39±4.282
Malnutrition	5	31	19.08±4.530

A significant difference was observed in terms of the EINLA scores of the participants by gender (t=-3.066; p<.05). Women ($\bar{x}$=22.03) had a higher mean score on the EINLA compared to men ($\bar{x}$=20.36). On the other hand, there was no significant difference in terms of the ASHN scores by gender (p>.05). A significant difference was found in terms of the EINLA scores (t=3.365; p<.05) and ASHN scores (t=3.078; p<.05) of the participants by marital status. Accordingly, the mean EINLA and ASHN scores of the married participants ($\bar{x}$=21.54; $\bar{x}$=73.09; respectively) were higher compared to the single participants ($\bar{x}$=19.58; $\bar{x}$=68.74; respectively). A significant difference was found in terms of the EINLA scores of the participants by smoking status (t=3,880; p<,05). Smokers ($\bar{x}$=22.05) had a higher mean score on the EINLA compared to non-smokers ($\bar{x}$=20.01). However, we found no significant difference in terms of the ASHN scores of the participants by smoking status (p>.05). There was a significant difference in terms of the EINLA scores of the participants by alcohol consumption (t=3.880; p<.05). Alcohol users ($\bar{x}$=22.74) had a higher mean score on the EINLA compared to non-alcohol users ($\bar{x}$=20.82). However, no significant difference was found in terms of the ASHN scores of the participants by alcohol consumption (p>.05).

There was no significant difference in terms of the EINLA and ASHN scores of the participants by chronic disease status (p>.05).In other words, the participants' nutrition literacy and attitudes towards healthy nutrition did not vary depending on their chronic disease status. There was a significant difference in terms of the ASHN scores of the participants by their chronic disease-specific diet status (t=-1.124; p<.05). Those following a disease-specific diet ($\bar{x}$=73.83) had a higher ASHN score compared to those without a disease-specific diet ($\bar{x}$=70.91). However, there was no significant difference in terms of the EINLA scores of the participants by their chronic disease-specific diet status (p>.05). A significant difference was found in terms of the EINLA scores (t=3.089; p<.05) and ASHN scores (t=12.062; p<.05) of the participants by whether or not they had three main meals a day. Accordingly, the mean EINLA and ASHN scores of the participants who had three main meals a day ($\bar{x}$=21.41; $\bar{x}$=75.34; respectively) were higher compared to those who did not have three main meals a day ($\bar{x}$=75.34; $\bar{x}$=59.17; respectively) (Table 4 and 5).

Table 4. Evaluation Instrument of Nutrition Literacy on Adults Scores of the Participants by Certain Descriptive Characteristics

			EINLA		
		N	Mean ± SD	t/F	P
Gender	Male	251	20.36±4.88	-3.066	**.002***
	Female	149	22.03±5.85		
BMI	Normal	177	21.87±5.46		
	Slightly Overweight	198	20.33±5.12	4.324	**.011***
	Obese	25	19.88±5.14		
Marital Status	Married	287	73.09± 0.79	3.078	**.002***
	Single	113	68.74±0.75		
Employment Status	Employed	83	24.70±10.33	12.089	**.000***
	Unemployed	207	18.62±12.77		
	Retired	110	22.63±13.45		
Educational Level	Primary school	180	17.98±3.58	132.101	**.000***
	Secondary school	113	20.79±3.82		
	High school	87	24.72±4.42		
	University and above	20	32.85±1.30		
Living Situation	Alone	96	20.54±5.59	7.622	**.001***
	With family	297	21.30±5.16		
	Nursing home	7	13.71±6.04		
Smoking Status	Yes	191	22.05±0.72	3.880	**.000***
	No	209	20.01±0.66		
Alcohol Consumption	Yes	34	22.74±0.72	2.011	**.045***
	No	366	20.82±0.66		
Chronic Disease	Yes	159	20.50±0.72	-1.492	.137
	No	241	21.31±0.66		
Diet	Yes	130	20.55± 5.15	-1.124	.262
	No	270	21.19±5.40		
Three Main Meals	Yes	314	21.41±5.50	3.089	**.002***
	No	86	19.43±4.27		
Three Snacks	Yes	108	23.49±5.82	5.967	**.000***
	No	292	20.06±4.81		
Packaged Food Consumption	Yes	142	24.99±4.90	14.173	**.000***

	No	258	18.78±4.12		
Reading Food Labels	Yes	142	24.99±4.90	13.455	**.000***
	No	258	18.78±4.12		
Reading Food Labels	Yes	93	26.58±4.77	14.173	**.000***
	No	307	19.29±4.20		
Exercise	Yes	55	24.20±5.57	4.962	**.000***
	No	345	20.47±5.10		

*p<.05

A significant difference was found in terms of the EINLA scores (t=5.967; p<.05) and ASHN scores (t=8.227; p<.05) of the participants by snacking status. Accordingly, the mean EINLA and ASHN scores of the participants who had a habit of snacking three times a day ($\bar{x}$=23.49; $\bar{x}$=79.91; respectively) were higher compared to those who did not have a habit of snacking ($\bar{x}$=20.06; $\bar{x}$=68.89; respectively). There was a significant difference in terms of the ASHN scores of the participants by consumption of packaged food (t=3.826; p<.05). Those who did not consume packaged food ($\bar{x}$=74.16) had a higher ASHN score compared to those who did not consume packaged food ($\bar{x}$=69.32). However, there was no significant difference in terms of the EINLA scores of the participants by consumption of packaged food (p>.05). A significant difference was found in terms of the EINLA scores (t=13.455; p<.05) and ASHN scores (t=9.560; p<.05) of the participants by whether of not they read food labels. Accordingly, the mean EINLA and ASHN scores of the participants who read food labels ($\bar{x}$=24.99; $\bar{x}$=79.34; respectively) were higher compared to the participants who did not ($\bar{x}$=18.78; $\bar{x}$=67.75; respectively). A significant difference was found in terms of the EINLA scores (t=14.173; p<.05) and ASHN scores (t=9.694; p<.05) of the participants by whether of not they read nutritional information. Accordingly, the mean EINLA and ASHN scores of the participants who read nutritional information ($\bar{x}$=26.58; $\bar{x}$=82.05; respectively) were higher compared to the participants who did not ($\bar{x}$=19.29; $\bar{x}$=68.78; respectively) (Table 4 and 5).

Table 5. Attitude Scale for Healthy Nutrition Scores of the Participants by Certain Descriptive Characteristics

			ASHN		
		N	Mean ± SD	t/F	P
Gender	Male	251	71.49±12.85	-.744	.457
	Female	149	72.48±12.85		
BMI	Normal	177	73.28±5.46	2.415	.115
	Slightly Overweight	198	70.53±5.12		
	Obese	25	72.28±5.14		
Marital Status	Married	287	73.09±.79	3.078	**.002***
	Single	113	68.74±.75		
Employment Status	Employed	83	77.25±12.85	59.126	**.000***
	Unemployed	207	69.34±5.63		
	Retired	110	72.55±3.63		
Educational Level	Primary school	180	69.28±12.33	17.242	**.000***
	Secondary school	113	69.90±13.28		
	High school	87	76.43±10.92		
	University and above	20	86.30±7.31		
Living Situation	Alone	96	68.89±14.60	3.434	**.033***
	With family	297	72.79±12.23		
	Nursing home	7	73.14±6.04		
Smoking Status	Yes	191	72.21±0.79	.516	.606
	No	209	71.55±0.75		
Alcohol Consumption	Yes	34	73.35±0.79	.707	.480
	No	366	71.72±0.75		
Chronic Disease	Yes	159	72.39±0.79	.666	.506
	No	241	71.51±0.75		
Diet	Yes	130	73.83±11.52	2.135	**.033***
	No	270	70.91±13.36		
Three Main Meals	Yes	314	75.34±10.63	12.062	**.000***
	No	86	59.17±12.29		
Three Snacks	Yes	108	79.91±9.85	8.227	**.000***

	No	292	68.89±12.56		
Packaged Food Consumption	Yes	142	82.05±9.06	-3.826	**.000***
	No	258	68.78±12.22		
Reading Food Labels	Yes	142	79.34±10.13	9.560	**.000***
	No	258	67.75±12.33		
Reading Food Labels	Yes	93	82.05±9.06	9.694	**.000***
	No	307	68.78±12.22		
Exercise	Yes	55	78.84±11.58	4.434	**.000***
	No	345	70.75±12.70		

*p<.05

A significant difference was found in terms of the EINLA scores (t=13.455; p<.05) and ASHN scores (t=9.560; p<.05) of the participants by exercise status. Accordingly, the mean EINLA and ASHN scores of the participants who exercised on a regular basis ($\bar{x}$=24.99; $\bar{x}$=79.34; respectively) were higher compared to the participants who did not ($\bar{x}$=18.78; $\bar{x}$=67.75; respectively). A significant difference was observed in terms of the EINLA scores of the participants by BMI (F=4.324; p<.05). The Scheffe multiple comparison test conducted to measure the significant difference level showed that the participants with normal weight ($\bar{x}$=21.87) had higher EINLA scores compared to the slightly overweight participants ($\bar{x}$=20.33). On the other hand, there was no significant difference in terms of the ASHN scores by BMI (p>.05). A significant difference was found in terms of the EINLA scores (F=12,089; p<.05) and ASHN scores (F=59.126; p<.05) of the participants by employment status. The Tukey multiple comparison test conducted to measure the significant difference level showed that the employed participants ($\bar{x}$=24.70; $\bar{x}$=77.25; respectively) had higher EINLA and ASHN scores compared to the retired ($\bar{x}$=22.63; $\bar{x}$=72.55) and unemployed participants ($\bar{x}$=18.62; $\bar{x}$=69.34). A significant difference was found in terms of the EINLA scores (F=132,101; p<.05) and ASHN scores (F=17.242; p<.05) of the participants by educational level. The Tukey multiple comparison test conducted to measure the significant difference level showed that university graduates ($\bar{x}$=32.85; $\bar{x}$=86.30; respectively) had higher EINLA and ASHN scores compared to high school graduates ($\bar{x}$=77.55; $\bar{x}$=18.62), primary school graduates ($\bar{x}$=17.98; $\bar{x}$=69.28), and secondary school graduates ($\bar{x}$=24.72; $\bar{x}$=76.43). High school graduates ($\bar{x}$=77.55; $\bar{x}$=18.62; respectively) had higher EINLA and ASHN scores compared to primary school graduates ($\bar{x}$=17.98; $\bar{x}$=69.28), and secondary school graduates ($\bar{x}$=24.72; $\bar{x}$=76.43) (Table 4 and 5).

A significant difference was found in terms of the EINLA scores (F=7.622; p<.05) and ASHN scores (F=3.434; p<.05) of the participants by living situation. The Scheffe multiple comparison test conducted to measure the significant difference level showed that those living with family ($\bar{x}$=21.30; $\bar{x}$=72.79; respectively) and those living alone ($\bar{x}$=20.54; $\bar{x}$=68.89) had higher EINLA and ASHN scores compared to those living in a nursing home ($\bar{x}$=13.71). Additionally, those living with family ($\bar{x}$=72.79) had higher EINLA and ASHN scores compared to those living alone ($\bar{x}$=68.89) (Table 4 and 5). Pearson's correlation analysis was conducted to investigate the nutrition literacy of the elderly and their attitudes towards healthy nutrition. There was a moderate and positive relationship between the nutrition literacy of the elderly and their attitudes towards healthy nutrition (r=0.528, p<.01) (Table 6).

Table 6. Relationship between Nutrition Literacy in Adults and Attitude for Healthy Nutrition

	Nutrition Literacy in Adults	
	r	**p**
Attitude for Healthy Nutrition	.528	**.000***

*p<.01

DISCUSSION

The incidence of non-communicable diseases increases with decreasing nutrition literacy level. Obesity is the most common of these diseases (15). The incidence of obesity, which is an important public health problem in Turkey as in the entire world, is increasing day by day. According to the 2019 data from the Turkish Nutrition and Health Survey (TNHS), the rate of obesity in Turkish adults is 39.6% (16). In the present study, 6.3% of the participants were obese and 49.5% were slightly overweight. In the study conducted by Özütürker, the obesity rate in the elderly was reported as 24.3% (17).

The total ASHN scores of the participants were analyzed in this study and it was found that 61% of the elderly individuals included in the study had high-level attitudes towards healthy nutrition. Similar to our study, Sargın and Güleşce (2022) also reported a high level of attitude towards healthy nutrition (18). It was concluded that positive developments such as easy access to information with the increasing use of the internet and social media and the provision of educational

information about healthy nutrition in TV programs may be effective in increasing individuals' attitudes towards healthy nutrition. The results of this study were similar to the literature. Individuals who exercise regularly make a conscious effort to stay healthy. They may have developed good nutrition habits with the same awareness.

The present study investigated the relationship between nutrition literacy and gender and revealed that women had a higher level of NL than men. Similarly, Özenoğlu et al. reported that women's NL levels were significantly higher than men (19). In Turkish society, it is generally seen as a woman's duty to cook and to buy food from markets and grocery stores before preparing meals. This may require women to be more involved with food. Additionally, social media and educational content in daytime TV programs attract more interest from women. These factors may explain the higher level of NL among women. No significant difference was found in the attitudes of the participants towards healthy nutrion (AHN) by gender. Similar to our findings, Özenoğlu et al. reported that there was no significant difference in terms of AHN between genders (19). In another study, the researchers found that the total score of men on ASHN was significantly higher than women (20).

Mearns et al. reported a negative correlation between BMI and NL (21). Similarly, we found a significant difference in terms of nutrition literacy by BMI. The nutrition literacy levels of the participants with normal weight were higher than the slightly overweight participants. Individuals with high nutrition literacy can keep their BMI levels within the normal range as they are able to make the right food choices, access healthy nutrition information more easily and structure their lives in line with this information. In the present study, only 13.8% of the participants stated that they exercised regularly. It was also observed that there was a positive correlation between NL and exercise. The rate of exercise decreases as individuals get older (22). Similar to our finding, the rate of exercise was found to be 17.1% in Çalık's 2013 study (23). Explaining the negative effects of a sedentary lifestyle to elderly individuals and encouraging them to engage in regular physical activity can greatly contribute to maintaining and improving their health. In another study, no correlation was found between the ASHN scores and the BMI of the participants (24). Similar to the literature, we found no significant difference in attitudes towards healthy nutrition by BMI values of the participants. While individuals may develop positive attitudes towards healthy nutrition, their efforts to keep their BMI within the normal limits may not be sufficient alone. Body weight can be affected by many variables such as economic status, educational level, marital status and physical activity level (25, 26).

Özenoğlu et al. (2021) reported that marital status did not affect the EINLA score (18). Özdenk and Özcebe (2018) reported that the NL levels of singles were higher than married individuals in their study (27). Topçu and Torpil (2022) found in their study that the EINLA scores of married participants were higher than those of singles (28). In the present study, we found that married individuals had higher EINLA scores than singles. In addition, it was observed that those living with their families had higher levels of nutrition literacy than those living alone and those living in nursing homes. Considering that married people have a more structured life compared to singles, it is expected that their eating habits will also be more structured. In addition, we believe that making healthy food choices in a family setting and consuming home-cooked meals may be the reason why the level of nutrition literacy is higher among married individuals. In their study, Sargın and Güleşce (2022) reported that single participants had higher total ASHN scores than married participants (20). Özenoğlu et al. (2021) found that married individuals had higher ASHN scores (19). In the present study, we found that married participants had higher ASHN scores, similar to the findings of Özenoğlu et al. In addition, it was observed that elderly individuals living with their families had higher ASHN scores than those living alone and those living in a nursing home. We believe that married individuals are able to develop healthy nutrition attitudes because they live in a family setting and their spouses and children share nutritional responsibilities with them.

When we examined the relationship between attitudes towards healthy nutrition and level of education, we found that the total ASHN score increased as the education level increased. Özenoğlu et al. (2021) also reported a significant relationship between attitudes towards healthy nutrition and education (19). We believe that as the level of education increases, individuals develop healthy nutrition attitudes by integrating information on healthy nutrition into their lives.

Nutrition habits and the macro- and micro-nutrients taken into the body are closely related to the health status of the individual (14). Diet-related chronic diseases account for more than half of the deaths worldwide (2). In the present study, no significant difference was found in terms of NL by chronic disease status. Er Döngel (2020) reported that the NL levels of individuals with chronic diseases were insufficient (29). Individuals with sufficient knowledge of nutrition tend to make the right food choices and develop healthy nutrition habits. We believe that providing training on healthy nutrition across societies can be effective in reducing the incidence of diet-related non-communicable chronic diseases. According to the results of the study, individuals with adequate NL level ate three main meals. Individuals who have nutrition literacy tend to include healthy behaviors in their nutrition habits. For this reason, it is an expected result that they regularly eat three main meals a day. In the present study, we found a significant difference in the participants' attitudes towards healthy nutrition by whether they followed a disease-specific diet. In this respect, we observed that those who followed a disease-specific diet had higher attitudes towards healthy nutrition than those who did not follow a disease-specific diet. We believe that elderly individuals with chronic diseases are more inclined to adhere to disease-specific diets in order to

protect their health, which in turn improves their attitudes towards nutrition.

CONCLUSION

The EINLA scores of the participants showed that only 29% had an adequate level of nutrition literacy, the EINLA subscale scores showed that a large proportion of the participants (91%) were inadequate in terms of food label reading and computational skills, and the ASHN scores showed that 61% had a high level of attitude towards nutrition. We believe that the nutrition literacy levels of the elderly should be increased. To this end, we recommend that elderly individuals should be trained on nutrition literacy and more scientific research should be conducted in Turkey, where the elderly population is increasing, since the number of studies on the nutrition literacy levels and nutrition habits of the elderly is limited and the issue concerns public health.

MAIN POINTS

1. Participants' nutritional literacy scale mean score and healthy eating attitude scale mean score was found to be above the average.
2. Positive relationship between nutrition literacy and attitude to healthy eating a moderate relationship was found in the direction.

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