Research Article

Health literacy levels of vocational school of health services students and related factors

Sağlık hizmetleri meslek yüksekokulu öğrencilerinin sağlık okuryazarlığı düzeyleri ve ilişkili faktörler

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Abstract

Introduction: The concept of health literacy requires individuals to have basic knowledge of health in order to use health services correctly and effectively, and this is very important. Considering that research in the field of health literacy in our country is not yet at a sufficient level, it was aimed to determine the level of the concept of health literacy, which is gaining importance, among students at vocational schools of health services and related factors.

Methods: The research is a descriptive cross-sectional type, and the population of the research consists of students studying at vocational schools of health services at Izmir Tinaztepe University, Ege University, Pamukkale University and Bolu Abant Izzet Baysal University. Individual Introduction Form and Health Literacy Scale were used as data collection forms.

Results: 1370 students participated in the research. The average age of the students is 20.29 ± 2.86 years, 78.5% are female and 21.5% are male. It was determined that 24.6% of the students smoked and 22.4% consumed alcohol. The proportion of students participating in the research who read books frequently is only 31.4%. It was determined that 46.7% of the students in the research group knew the concept of health literacy. It was determined that the average score of the students in the research group on the health literacy scale was 110.24 ± 12.22. In addition, it was determined that the average of the subscales, the access to information dimension, was 21.93 ± 2.96, the average of the information understanding dimension was 31.17 ± 3.58, the average of the evaluation/evaluation dimension was 35.40 ± 4.57, and the average of the application/use dimension was 21.74 ± 3.13. According to the findings of the research, it was determined that there was a statistically significant difference between the health literacy scale scores of the students according to their gender, family structure and literacy level, income level, smoking status, book reading frequency and general health status ($p <0.05$).

Conclusion: The health literacy levels of the students participating in the research are sufficient and high. Removing the factors that negatively affect the level of health literacy from individuals' lives and lifestyles should be planned comprehensively. It is also recommended to plan activities that will increase the level of health literacy during university education. Studies and activities should be planned to address the fact that students, who are in a field such as healthcare, where human relations are intense and technological developments and innovations are constantly experienced, do not read books frequently enough. It is also recommended that male students be provided with more support mechanisms to increase their health literacy level.

Keywords*:* Health literacy, Universities, Students, Public Health

Öz

Giriş: Sağlık okuryazarlığı kavramı, bireylerin sağlık hizmetlerini doğru ve etkili bir şekilde kullanabilmeleri için temel sağlık bilgisine sahip olmalarını gerektirir ve bu oldukça önemlidir. Ülkemizde sağlık okuryazarlığı alanında yapılan araştırmaların henüz yeterli düzeyde olmaması göz önünde bulundurularak, giderek önem kazanan sağlık okuryazarlığı kavramının, sağlık hizmetleri meslek yüksekokulu öğrencileri arasındaki seviyesi ve ilişkili faktörlerin belirlenmesi amaçlanmıştır.

Yöntem: Araştırma tanımlayıcı kesitsel tipte olup, örneklem seçimine gidilmemiş, evrenini ve örneklemini İzmir Tınaztepe Üniversitesi, Ege Üniversitesi, Pamukkale Üniversitesi ve Bolu Abant İzzet Baysal Üniversitesi'nde, sağlık hizmetleri meslek yüksekokullarında öğrenim gören öğrenciler oluşturmuştur (n=1370). Veri toplama formu olarak Birey Tanıtım Formu ve Sağlık Okuryazarlığı Ölçeği kullanılmıştır. Etik onay alınmıştır. Verilerin analizinde tanımlayıcı istatistikler ile tek değişkenli analizler sunulmuştur.

Bulgular: Öğrencilerin yaş ortalamaları 20,29±2,86 olup, %78,5'i kadın, %21,5'i erkektir. Öğrencilerin %24,6'sının sigara içtiği, %22,4'ünün alkol kullandığı tespit edilmiştir. Araştırmaya katılan öğrencilerden sıklıkla kitap okuyanlarının oranı yalnızca %31,4'tür. Araştırmaya grubunu oluşturan öğrencilerin %46.7'sinin sağlık okuryazarlığı kavramını bildiği tespit edilmiştir. Araştırma grubunu oluşturan öğrencilerin sağlık okuryazarlığı ölçeğinden aldıkları puan ortalamasının 110,24±12,22 olduğu saptanmıştır. Ayrıca alt ölçekler olan, bilgiye erişim boyutu ortalamasının 21,93±2,96, bilgileri anlama boyutu ortalamasının 31,17±3,58, değer biçme/değerlendirme boyutu ortalamasının 35,40±4,57, uygulama/kullanma boyutu ortalamasının 21,74±3,13 olduğu saptanmıştır. Araştırmadan elde edilen bulgulara göre öğrencilerin cinsiyetlerine, aile yapısına ve okuryazarlık seviyesine, gelir düzeyine, sigara kullanma durumuna, kitap okuma sıklığına ve genel olarak sağlık durumuna göre sağlık okuryazarlığı ölçeği puanları arasında istatistiksel olarak anlamlı bir fark olduğu tespit edilmiştir (p<0,05).

Sonuç: Araştırmaya katılan öğrencilerin sağlık okuryazarlık kavramını bilmediği, ancak sağlık okuryazarlığı düzeylerinin yeterli ve yüksek düzeyde olduğu tespit edilmiştir. Üniversite eğitimi süresince sağlık okuryazarlığı farkındalık düzeyini yükseltecek proje ve etkinliklerin planlanması ayrıca önerilmektedir. Sağlık alanı gibi insan ilişkilerinin en yoğun olduğu ve teknolojik gelişmeler ile yeniliklerin sürekli olarak yaşandığı bir alanda olan öğrencilerin kitap okuma sıklıklarının yeterince iyi olmaması üzerine de çalışmalar ve etkinlikler planlanmalıdır. Ayrıca erkek öğrencilerin sağlık okuryazarlık düzeyinin arttırılması için kendilerine daha fazla destek mekanizmaları sağlanması önerilmektedir.

Anahtar kelimeler: Sağlık okuryazarlığı, Üniversiteler, Öğrenciler, Halk Sağlığı

Key Points

1. It has been determined that 53.3% of associate degree students studying in the field of health are not familiar with the concept of health literacy.
2. The average score on the health literacy scale was found to be 110.24±12.22 out of a maximum possible score of 125.

Introduction

Individuals need various types of information to protect and improve their health. In literature, the ability of individuals to access, understand, and apply the necessary information is defined as "health literacy." In general terms, it refers to efforts to encourage individuals in society to possess basic health knowledge and to improve this level of knowledge [1]. Research on health literacy conducted both globally and in our country has shown that health literacy is not at the desired level. In a study conducted in eight European countries in 2010 by the Health Literacy Survey-European Union (HLS-EU) Consortium, it was found that 35.2% of individuals had problematic health literacy, 12.4% had inadequate health literacy, and 16.5% had excellent health literacy levels [2]. A similar study conducted in our country in 2014 revealed that 64.6% of individuals had inadequate or problematic health literacy levels. In the following years, according to the results of the "Turkey Health Literacy Level and Related Factors Research" conducted by the Ministry of Health - General Directorate of Health Promotion, 68.9% of individuals were found to have inadequate or problematic health literacy levels.

Health literacy in society is shaped by the prevailing social structure, the existing healthcare system, and the current educational system. Health literacy is also considered one of the health determinants, along with factors such as age, education, and income. In this context, various policies are being developed to address health literacy in the provision of healthcare services [1-3]. Health literacy influences health outcomes both directly and indirectly. Studies have shown that individuals with inadequate health literacy are less likely to take important preventive measures. These individuals are at a higher risk of developing chronic diseases, have less knowledge about illnesses, are more frequently hospitalized, and tend to use emergency services more often. Consequently, healthcare costs have been found to increase due to all these factors [4-6].

Although studies related to health literacy, a concept that is gaining importance both globally and in our country, are increasing, research conducted in specific groups and the general population in our country is still limited. University education, which is one of the most critical points in a person's life, is a period where the transition to adulthood, self-confidence, and independent decision-making are formed. A study conducted on university students revealed that only those in their fourth year and those receiving treatment for a disease had significantly higher levels of health literacy [7,8]. Considering the lack of sufficient research on this subject in our country, this study aims to determine the level of health literacy and related factors among students at health services vocational schools, focusing on this growing and important concept.

Methods

The study is descriptive cross-sectional research. The population of the study consisted of students enrolled in health services vocational schools at İzmir Tınaztepe University, Ege University, Pamukkale University, and Bolu Abant İzzet Baysal University. No sampling method was applied in this research, as the researchers aimed to reach the entire population due to their academic positions at the respective universities. A total of 1,370 students who agreed to participate formed the research sample (n=1370).

The data for the study were collected between August 1, 2022, and October 2, 2022. The data collection tools used in the research were the Personal Information Form and the Adult Health Literacy Scale Form. These forms and the scale were prepared online via Google Forms and collected based on student volunteer participation. Before filling out the forms, students were provided with a text explaining the purpose of the research and asked for their consent to participate voluntarily in the study.

Personal Information Form: This form consists of 13 questions designed to collect demographic and background information about the students, such as their age, gender, field of study, family structure, etc. It was developed by researchers after reviewing the relevant literature.

Health Literacy Scale: The 47-item HLS-EU (Health Literacy Survey in Europe) form, developed by Sorensen, was later simplified by Toçi, Bruzarive, and Sorensen, who worked together on its validity and reliability tests. The Turkish validity and reliability study of the scale was conducted by Aras and Bayık Temel. The Health Literacy Scale consists of 25 items and four subscales.

Access to Information subscale includes 5 items (items 1-5), with a minimum score of 5 and a maximum score of 25.Understanding Information subscale includes 7 items (items 6-12), with a minimum score of 7 and a maximum score of 35.Appraisal/Evaluation subscale includes 8 items (items 13-20), with a minimum score of 8 and a maximum score of 40.Application/Utilization subscale includes 5 items (items 21-25), with a minimum score of 5 and a maximum score of 25.The overall scale has a minimum score of 25 and a maximum score of 125. All items on the scale are positively worded, and there are no reverse-scored items. The standard deviation of the original scale is 0.95, and the internal consistency coefficients (Cronbach's alpha) for the subscales range between 0.90 and 0.94, indicating good reliability. In this study, the internal consistency coefficients for the subscales were calculated as follows: access to information: 0.851,understanding information 0.809, appraisal/evaluation 0.870 application/utilization 0.775 for the entire health literacy scale, the coefficient was found to be 0.933. These results indicate that the health literacy scale used in this study has "good" internal consistency and reliability [9-11].

Ethical approval, informed consent and permissions

Ethical approval for the study was obtained from the İzmir Tınaztepe University Health Sciences Scientific Research and Publication Ethics Committee (Approval No: 027-25.10.2021). Additionally, institutional permission was obtained from the vocational school directorates of the four universities where the research data were collected.

Statistical analysis

The data collected for the study were analyzed using the SPSS for Windows 25.0 (SPSS Inc., Chicago, IL, USA) software. To conduct a "Reliability Analysis," the data from the scales used in the study were evaluated using descriptive statistical methods (frequency, percentage, mean, and standard deviation). Outliers and extreme values, which can increase error variance and thus affect the power of statistical methods, were examined before starting the statistical analyses, and the presence of such values in the datasets was determined.

The suitability of the data for normal distribution was tested, and it was determined that the data followed a normal distribution. For normally distributed data, the independent samples t-test was used to compare two independent groups. For comparisons involving more than two independent groups, one-way analysis of variance (ANOVA) was applied. When significant differences were found, the Bonferroni correction was used to determine which specific groups the differences originated from.

Results

The distribution of the descriptive characteristics of the students included in the study is presented in Table 1. According to the data collected through the personal information form, it was found that 44.5% of the students were under the age of 20, while 55.5% were 20 years old or older. When examining the distribution of students by gender, 78.5% were female, and 21.5% were male. It was also determined that 24.6% of the students smoked, while 75.4% did not, and 22.4% consumed alcohol, while 77.6% did not. Additionally, 46.7% of the students reported being familiar with the concept of health literacy, while 53.3% were not familiar with it.

Table 1. Descriptive characteristics of the individuals participating in the research

Variables		n	%
Age (x̄±sd, 20.29±2.86)	Under the age of 20	310	44.5
	20 years and above	760	55.5
Gender	Woman	1075	78.5
	Male	295	21.5
University	Bolu Abant Izzet Baysal University,	159	11.6
	Pamukkale University	362	26.4
	Ege University	557	40.7
	University of Izmir Tınaztepe	292	21.3
Family structure	Nuclear family	1004	73.3
	Large family	252	18.4
	Broken family	114	8.3
Income level	The income and expenditure of less than	474	34.6
	Equivalent to the income and expenditure	765	55.8
	More than the income and expenditure	131	9.6
Mother's educational background	İlliterate,	96	7.0
	Literate	57	4.2
	Primary School	551	40.2
	Middle School	217	15.8
	High School	350	25.5
	University	99	7.2
Father's educational background	İlliterate,	21	1.5
	Literate	34	2.5
	Primary School	440	32.1
	Middle School	279	20.4
	High School	426	31.1
	University	170	12.4
Smoking status	Yes	337	24.6
	No	1033	75.4
Alcohol consumption status	Yes	307	22.4
	No	106	77.6
COVID-19 infection status	Yes	322	23.5
	No	1048	76.5
Frequency of reading the book	Never read	76	5.5
	Occasional	864	63.1
	Frequently	430	31.4
General health status	Bad	43	3.1
	Not bad	319	23.3
	Good	627	45.8
	Pretty good	239	24.0
	Exceptional	52	3.8
The status of knowledge of the concept of health literacy	Yes	640	46.7
	No	730	53.3
	Total	**1370**	**100.0**

Descriptive statistics for the health literacy scale used in the study are presented in Table 2. It was determined that the average score for the information access dimension is 21.93 ± 2.96, the average score for the understanding information dimension is 31.17 ± 3.58, the average score for the evaluation/assessment dimension is 35.40 ± 4.57, the average score for the application/usage dimension is 21.74 ± 3.13, and the average score for the health literacy scale is 110.24 ± 12.22.

Table 2. Descriptive statistics of the scale used in the research

Scale and Dimensions	Minimum	Maximum	Average±SS	Highest score that can be achieved
Access to information dimension	8.00	25.00	21.93±2.96	5-25
Dimension of understanding information	14.00	35.00	31.17±3.58	7-35
Appraisal/appraisal dimension	10.00	40.00	35.40±4.57	8-40
App/usage size	5.00	25.00	21.74±3.13	5-25
Health Literacy Scale	54.00	125.00	110.24±12.22	25-125

When comparing the health literacy scale and its dimensions according to the descriptive characteristics of the health services vocational school students in the study group, a statistically significant difference was found in the scores of the information access dimension, understanding information dimension, evaluation/assessment dimension, and application/usage dimension based on the students' gender ($p<0.05$). It was determined that female students scored higher on the Health Literacy Scale and all subscales compared to male students.

A statistically significant difference was also found in the information access dimension, understanding information dimension, evaluation/assessment dimension, application/usage dimension, and health literacy scale scores based on the students' universities ($p<0.05$). Students from Ege University and İzmir Tınaztepe University scored higher in the information access dimension, understanding information dimension, and evaluation/assessment dimension compared to students from Bolu Abant İzzet Baysal University. Pamukkale University students scored higher in the understanding information dimension and evaluation/assessment dimension compared to students from Bolu Abant İzzet Baysal University. Furthermore, students from İzmir Tınaztepe University scored higher in the application/usage dimension compared to students from Bolu Abant İzzet Baysal University and Ege University. The health literacy scale scores of students from Pamukkale University, Ege University, and İzmir Tınaztepe University were found to be higher than those of students from Bolu Abant İzzet Baysal University.

A statistically significant difference was found in the scores of the health literacy scale and all subscales based on the family structure of the health services vocational school students in the study group ($p<0.05$). Students from nuclear families scored higher in the information access dimension, understanding information dimension, evaluation/assessment dimension, application/usage dimension, and health literacy scale compared to students from extended families.

Based on the income levels of the participating students, a statistically significant difference was found in the scores of the information access dimension, application/usage dimension, and health literacy scale ($p<0.05$). Students whose income exceeded their expenses scored higher in the information access dimension compared to those whose income was less than their expenses. Students whose income exceeded their expenses also scored higher in the application/usage dimension and health literacy scale compared to those whose income was less than their expenses. Students whose income was equal to their expenses scored higher in the application/usage dimension compared to those whose income was less than their expenses.

A statistically significant difference was found in the scores of the information access dimension, evaluation/assessment dimension, application/usage dimension, and health literacy scale based on the educational status of the students' mothers ($p<0.05$). It was observed that students whose mothers' educational status was middle school and university scored higher on the health literacy scale compared to participants whose mothers were illiterate.

There was a statistically significant difference in the scores of the information access dimension, understanding information dimension, evaluation/assessment dimension, application/usage dimension, and health literacy scale based on the frequency of book reading among the participating students ($p<0.05$). Students who read books frequently score higher in the information access dimension, understanding information dimension, evaluation/assessment dimension, application/usage dimension, and health literacy scale compared to students who never read books.

A statistically significant difference was found in the scores of the information access dimension, evaluation/assessment dimension, application/usage dimension, and health literacy scale based on the general health of the participating students ($p<0.05$). Students with very good and excellent general health scored higher in the information access dimension, evaluation/assessment dimension, application/usage dimension, and health literacy scale compared to students whose general health status was fair.

There was a statistically significant difference in the scores of the information access dimension, understanding information dimension, evaluation/assessment dimension, application/usage dimension, and health literacy scale based on whether the participating students were familiar with the concept of health literacy ($p<0.05$). Students who understood the concept of health literacy scored higher in the information access dimension, understanding information dimension, evaluation/assessment dimension, application/usage dimension, and health literacy scale compared to students who did not.

Table 3. Comparison of health literacy scale and dimensions according to the descriptive characteristics of the participants participating in the research

Variables		Access to Information Dimension		The Dimension of Understanding Information		Appraisal/Evaluation Dimension		Application/ Usage Size		Health Literacy Scale	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Gender	Woman	22.10	2.80	31.39	3.33	35.69	4.24	21.86	3.04	111.04	11.39
	Male	21.31	3.41	30.36	4.27	34.33	5.49	21.33	3.40	107.32	14.49
	Test value	4.058**		4.428**		4.595**		2.596**		4.669**	
	p	<0.001*		<0.001*		<0.001*		0.010*		<0.001*	
University	Bolu Abant İzzet Baysal University (1)	21.12	3.44	30.00	4.74	33.89	5.59	21.14	3.60	106.14	15.87
	Pamukkale University (2)	21.73	2.71	31.13	3.61	35.36	4.47	21.84	2.93	110.06	11.72
	Ege University (3)	22.11	2.93	31.39	3.16	35.46	4.35	21.56	3.10	110.52	11.26
	Izmir Tınaztepe University (4)	22.26	2.94	31.45	3.47	36.15	4.29	22.30	3.05	112.16	11.83
	Test value	6.503***		7.055***		8.632***		5.953***		8.636***	
	p	<0.001*		<0.001*		<0.001*		<0.001*		<0.001*	
	Bonferroni	3>1, 4>1		2>1, 3>1, 4>1		2>1, 3>1, 4>1		4>1, 4>3		2>1, 3>1, 4>1	
Family structure	Nuclear Family (1)	22.09	2.84	31.29	3.40	35.59	4.37	21.85	3.04	110.82	11.67
	Large Family (2)	21.31	3.32	30.66	4.16	34.50	5.27	21.21	3.51	107.67	14.45
	Broken Family (3)	21.89	2.94	31.28	3.70	35.73	4.38	21.95	2.83	110.85	10.84
	Test value	7.106***		3.177***		6.140***		4.487***		6.878***	
	p	0.001*		0.042*		0.002*		0.011*		0.001*	
	Bonferroni	1>2		1>2		1>2, 3>2		1>2		1>2	
Income level	Income is less than expense (1)	21.72	2.94	31.04	3.65	35.20	4.73	21.27	3.42	109.23	12.46
	Income equals expense (2)	21.97	2.96	31.17	3.59	35.42	4.54	21.97	2.96	110.53	12.21
	Income is more than expense (3)	22.45	2.93	31.65	3.25	35.99	4.11	22.15	2.72	112.24	11.08
	Test value	3.355***		1.464***		1.565***		8.590***		3.606***	
	p	0.035*		0.232		0.210		<0.001*		0.027*	
	Bonferroni	3>1						2>1, 3>1		3>1	
Mother's educational background	Illiterate (1)	20.84	2.94	30.25	3.19	33.84	4.80	20.70	3.07	105.64	11.52
	Literate (2)	22.19	2.87	31.19	3.65	35.04	4.76	21.18	3.40	109.60	12.50
	Primary School (3)	21.78	2.89	31.09	3.43	35.33	4.45	21.78	2.97	109.98	11.55
	Middle School (4)	21.95	2.98	31.36	3.90	35.44	4.70	21.63	3.33	110.37	13.01
	High School (5)	22.25	2.90	31.41	3.53	35.89	4.28	22.07	3.10	111.61	12.00
	University (6)	22.49	3.26	31.22	4.10	35.71	5.27	21.99	3.30	111.41	14.26
	Test value	4.573***		1.766***		3.249***		3.498***		3.924***	
	p	<0.001*		0.117		0.006*		0.004*		0.002*	
	Bonferroni	4>1, 5>1, 6>1				3>1, 5>1		3>1, 5>1		3>1, 4>1, 5>1, 6>1	
Father's educational background	Illiterate (1)	20.76	3.51	30.67	2.65	34.24	4.79	20.14	3.62	105.81	12.24
	Literate (2)	21.62	3.10	30.12	4.79	34.94	5.45	20.91	3.43	107.59	14.31
	Primary School (3)	21.63	2.99	31.16	3.38	35.00	4.66	21.68	3.12	109.47	11.95
	Middle School (4)	21.89	2.87	31.01	3.79	35.48	4.44	21.81	2.95	110.18	11.89
	High School (5)	22.21	2.99	31.32	3.50	35.76	4.37	21.78	3.20	111.08	12.24
	University (6)	22.25	2.77	31.36	3.73	35.64	4.77	22.07	3.07	111.32	12.75
	Test value	2.814***		1.045***		1.679***		2.030***		1.897***	
	p	0.016*		0.390		0.136		0.072		0.092	
	Bonferroni	5>3									

Table 3. Comparison of the health literacy scale and dimensions according to the descriptive characteristics of the participants participating in the research (continued)

Variables		Access to Information Dimension		The Dimension of Understanding Information		Appraisal/Evaluation Dimension		Application/ Usage Size		Health Literacy Scale	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Smoking status	Yes	21.76	3.24	31.23	3.72	34.98	4.81	21.06	3.40	109.03	12.77
	No	21.98	2.86	31.15	3.53	35.54	4.48	21.97	3.00	110.64	12.01
	Test value	-1.201**		0.371**		-1.950**		-4.679**		-2.101**	
	p	0.230		0.711		0.051		**<0.001***		**0.036***	
Alcohol use	Yes	22.03	3.12	31.36	3.62	35.16	4.62	21.10	3.32	109.65	12.29
	No	21.90	2.91	31.12	3.57	35.47	4.55	21.93	3.04	110.41	12.20
	Test value	0.705**		1.038**		-1.033**		-4.130**		-0.962**	
	p	0.481		0.300		0.302		**<0.001***		0.336	
Frequency of reading the book	Never read (1)	21.50	3.51	30.18	4.76	34.38	5.38	21.32	3.67	107.38	15.59
	Occasional (2)	21.68	3.03	30.90	3.62	35.10	4.67	21.55	3.10	109.22	12.40
	Frequently (3)	22.50	2.62	31.90	3.13	36.19	4.09	22.21	3.04	112.80	10.71
	Test value	11.943***		14.551***		10.332***		7.298***		14.765***	
	p	**<0.001***		**<0.001***		**<0.001***		**0.001***		**<0.001***	
	Bonferroni	**3>1, 3>2**		**3>1, 3>2**		**3>1, 3>2**		**3>2**		**3>1, 3>2**	
Health status in general	Bad (1)	22.14	3.88	31.23	4.43	34.93	5.09	20.35	4.28	108.65	15.22
	Not bad (2)	21.46	3.15	30.90	3.79	34.42	5.04	20.89	3.56	107.67	13.09
	Good (3)	21.81	2.84	31.06	3.46	35.44	4.30	21.83	2.87	110.13	11.55
	Pretty good (4)	22.46	2.78	31.49	3.42	36.06	4.32	22.41	2.70	112.42	11.46
	Exceptional (5)	22.69	2.86	32.17	3.72	37.12	4.54	22.87	3.21	114.85	13.01
	Test value	5.955***		2.277***		7.482***		14.105***		8.351***	
	p	**<0.001***		0.059		**<0.001***		**<0.001***		**<0.001***	
	Bonferroni	**4>2, 5>2, 4>3**				**3>2, 4>2, 5>2**		**3>1, 4>1, 5>1, 3>2, 4>2, 5>2**		**3>2, 4>2, 5>2**	
Knowledge of the concept of health literacy	Yes	22.60	2.66	31.90	3.29	36.23	4.22	22.28	2.90	113.00	11.21
	No	21.34	3.08	30.53	3.71	34.68	4.74	21.28	3.25	107.83	12.56
	Test value	8.035**		7.163**		6.349**		5.971**		7.990**	
	p	**<0.001***		**<0.001***		**<0.001***		**<0.001***		**<0.001***	

*p<0.05, **T test in independent groups, ***One-way analysis of variance

Discussion

The aim of this research is to determine the level of health literacy, an evolving and significant concept, among health services vocational school students and the associated factors. The average scores of the participating students on the health literacy scale were found to be 110.24±12.22, which indicates a good and sufficient level when evaluated on a maximum score of 125. According to the research, statistically significant differences were found between the scores obtained from the health literacy scale and factors such as gender, family structure, income level, mother's education level, smoking status, reading frequency, overall health status, and familiarity with the concept of health literacy.

When examining the average scores related to gender, it was found that female students scored higher on the health literacy scale compared to male students. In a study conducted by Ertaş and Göde on health services vocational school students, it was determined that female students had higher scores on the health literacy scale than male students [12]. Similarly, in a study conducted by Buran and Yüksel Kaçan with nursing students, female students again scored higher than male students on the health literacy scale [13]. Akçilek's research on university students also found that female students had higher health literacy than male students [14]. This could be explained by the fact that women possess more research-oriented characteristics than men due to societal gender roles. These findings are consistent with previous research.

When examining the average scores related to family structure, it was found that students from nuclear families scored higher on the health literacy scale than those from extended families. Buran and Yüksel Kaçan also found that students from nuclear families had higher scores on the health literacy scale compared to those from extended families [13]. This situation can be explained by the differentiation of individual roles within nuclear family structures compared to extended families.

Regarding income levels, it was found that students whose income exceeded their expenses had higher health literacy scores than those whose income was less than their expenses. Similar results were also found in a study by Buran and Yüksel Kaçan with nursing students [13]. In research conducted by Yorulmaz and Sezer, students who reported their income level as good also scored higher on the health literacy scale compared to others [15]. Hoover and colleagues also indicated that students with higher income levels had better health literacy [16]. This can be interpreted as a result of having better financial resources for maintaining and promoting health.

When examining family literacy, it was observed that as the literacy levels of mothers and fathers increased, the scores of students on the health literacy scale also increased. A statistically significant difference was found in the health literacy scale scores based on the educational status of the students' mothers. Similar results were found in a study conducted by Şirin and colleagues [7]. According to the Turkish Statistical Institute's Family Structure Survey, when examining the household members' involvement in domestic tasks by gender, it is noted that women generally take on these responsibilities. The study found that women bear the highest responsibility (94.4%) for child care and upbringing [17]. The literature suggests that there may be a relationship between maternal literacy and the health literacy scores of young people, which can be explained by the mother's responsibility in shaping children's basic behaviors during their growth and development periods.

In the research, a statistically significant difference was found between smoking status and health literacy. It was determined that students who do not smoke scored higher on the health literacy scale than those who do smoke. Hoover and colleagues also reported similar results [16]. Similar findings were also reported by Şirin and colleagues [7]. In a study by Kaçkin and colleagues, no statistical difference was found between smoking status and health literacy scale scores, but it was determined that non-smoking students scored higher on the health literacy scale than those who smoke [18]. Individuals with sufficient health literacy tend to value preventive health services more and are likely to adopt positive health habits, which can explain the related findings [19].

Students who read books frequently scored higher on the health literacy scale than those who read occasionally or never read, and a statistically significant difference was found between the related variables. Similar results were reported in a study conducted by Güven and colleagues with students from the faculty of health sciences [20]. This finding supports the idea that health literacy can be influenced by the frequency of reading, which can be explained by the differences in reading habits.

Overall, a statistically significant difference was found between perceived general health status and health literacy scores. According to research conducted by Ertaş and colleagues, as individuals' general health status improves, their level of health literacy also increases [21]. Similar results were found in research conducted by Kazak and colleagues [22]. This can be explained by the tendency of students who perceive their general health status as good, very good, or excellent to exhibit more proactive behaviors regarding health maintenance and promotion.

In the research, a statistically significant difference was found between the scores obtained from the health literacy scale and the familiarity with the concept of health literacy. Similar results were found in research conducted by Torres and Nickhols [23]. Similar findings were also reported by Yorulmaz and Sezer [15]. It can be explained that students who have previously gained knowledge about health literacy may engage in research related to the subject and make efforts for self-improvement, which can increase their health literacy scores.

Based on the data obtained from the research findings, it indicates that the average scores of the students forming the study group on the health literacy scale reflect a good level. In research conducted by Yorulmaz and Sezer, the average score obtained by students from the same scale was reported as 110±12.70, while Buran and Yüksel Kaçan reported an average score of 102.69±19.30, Çakmak and İnkaya reported 107.65±9.43, Kaçkin and colleagues reported 102.94±16.95, and Kuloğlu and Uslu reported 104.07±15.12 [13, 15, 18, 24, 25]. The research results align with current literature.

Limitations

The study has some limitations. One limitation is that the research population consists solely of health services vocational school students from four universities. Another significant limitation is the lack of comparative analysis between public and private universities within the population and sample.

Conclusion

The health literacy levels of the students participating in the study are adequate and high. Although the research presents results consistent with existing literature, there is a need for more extensive follow-up studies due to the limited scope of related studies. Factors that negatively affect health literacy levels should be comprehensively projected by examining individuals' lives and lifestyles. It is also recommended to plan activities that will raise health literacy levels during university education. Additionally, studies and activities should be planned to address the insufficient reading frequency of students in a field like health, where human relationships are most intense and where technological developments and innovations are constantly occurring. Furthermore, it is suggested that more support mechanisms be provided to male students to increase their health literacy levels. It is also recommended to conduct mixed-method studies examining different aspects of health literacy, identifying its differences from other types of literacy, qualitative studies that explore the concept, and research addressing the individual and societal effects of health literacy with various variables.

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Author Contributions		Author Initials
SCD	Study Conception and Design	OÇ,
AD	Acquisition of Data	OÇ, NB, SÖG, TY
AID	Analysis and Interpretation of Data	OÇ, NB, SÖG, TY
DM	Drafting of Manuscript	OÇ, NB, SÖG, TY
CR	Critical Revision	OÇ,

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References

1. Tanriöver MD, Yildirim HH, Ready FND, Cakir B, Akalin HE. (2014). [Türkiye health literacy research] (in Turkish). Sağlık-Sen Publications 2014;6,42-7.
2. HLS-EU Consortium. Comparative report on health literacy in eight EU member states the European health literacy survey 2012.
3. Ozkan S, et al. [Türkiye health literacy level and related factors research] (in Turkish). Ankara: Özyurt Printing Publications; 2018.
4. Scott TL, Gazmararian JA, Williams MV, Baker DW. Health literacy and preventive health care use among medicare enrollees in a managed care organization. Medical Care 2002;40(5): 395-4.
5. Schillinger D, Piette J, Grumbach K, et al. Closing the loop: Physician communication with diabetic patients who have low health literacy. Archives of Internal Medicine 2003;163(1): 83-90.
6. Howard DH, Gazmararian J, Parker RM. The impact of low health literacy on the medical costs of medicare managed care enrollees. The American Journal of Medicine 2005;118(4):371-77.
7. Sirin H, Deniz S., Oguzoncul AF, Ketrez G, Ertugrul O, Memis D. Assessment of health literacy level and relevant factors amongst the students of Fırat University Vocational School. Estudam Public Health Journal 2021;6(2):148-58. https://doi.org/10.35232/estudamhsd.870563
8. Dincer A, Kursun S. The determination of health literacy levels of university students. Journal of Continuing Medical Education 2017;26(1): 20-6.
9. Aras Z, Bayik Temel A. Evaluation of validity and reliability of the Turkish version of health literacy scale. FNJN 2017;25(2): 85-94. https://doi.org/10.17672/fnhd.94626
10. Toci E, Burazeri G, Sorensen K, et al. Health literacy and socioeconomic characteristics among older people in transitional Kosovo. British Journal of Medicine & Medical Research 2013;3(4):1646-58.
11. Ozdamar K. [Structural equation modeling of scale and test development in education, health and behavioral sciences] (in Turkish). Eskisehir: Nisan Bookstore; 2015.
12. Ertas, H, Gode A. Investigation of relationship between health literacy with anti-vaccine: a study on college students. Journal of Academic Value Studies, 2021;7(1):3. https://doi.org/10.29228/javs.49907
13. Buran G, Yuksel Kacan C. Examining the relationship between nursing students' health literacy and traditional and complementary medicine attitudes. BAUN Health Sci J, 2023;12(1):118-25. https://doi.org/10.53424/balikesirsbd.1039929
14. Akcilek E. Examination of health literacy and quality of life in university students. Istanbul Medipol University, Institute of Health Sciences, Department of Health Management, 2017.
15. Yorulmaz DS, Sezer HK. Investigation of the nursing and first aid and emergency department students' health literacy and the affecting factors. Journal of Inonu University Health Services Vocational School 2021;9(1):337-52. https://doi.org/10.33715/inonusaglik.812385
16. Hoover DS, Vidrine JI, Shete S, Spears CA, Cano MA, Correa-Fernández V, et al. Health literacy, smoking, and health indicators in African American Adults. Journal of Health Communication 2015;20(2):24-33. https://doi.org/10.1080/10810730.2015.1066465
17. Turkish Statistical Institute. Türkiye Family Structure Survey 2021. Available at: https://data.tuik.gov.tr/Bulten/Index?p=Turkiye-Aile-Yapisi-Arastirmasi-2021-45813 (Access Date: April 1, 2024).
18. Kaçkin O, Kılıç M, Ersin F. Perceptions of self-efficiency of nursing students, their health literacy level and affecting factors. Journal of Harran University Faculty of Medicine, 2023;20(2):256-64. https://doi.org/10.35440/hutfd.1269468
19. Dogan M, Cetinkaya F. THE relationship of health literacy level with positive health behaviors in academicians. Journal of Health Sciences. 2019;28(3):135-41. https://doi.org/10.34108/eujhs.492647
20. Guven DY, Bulut H, Ozturk S. Examining the health literacy levels of health sciences faculty students. Journal of History Culture and Art Research, 2018;7(2):400-9. https://doi.org/10.7596/taksad.v7i2.1511
21. Ertas H, Kirac R, Kavuncu B. Determination of health literacy levels of the faculty of health sciences. Social Sciences, 2019;14(4):1459-69. https://doi.org/10.29228/TurkishStudies.24969

22. Kazak A, Basaran F, Coskun N, Karakullukcu S. Evaluation of health literacy and healthy lifestyle behaviors of university students that study in health-related department. Kocaeli Med J 2021;10(3):273–83. https://doi.org/10.5505/ktd.2021.22438

23. Torres R, Nichols J. Health literacy knowledge and experiences of associate degree nursing students: A pedagogical study. Teaching and Learning in Nursing 2014;9(2):84-92. https://doi.org/10.1016/j.teln.2013.11.003

24. Cakmak B, İnkaya B. Evaluation of the relationship between complementary and alternative approaches of nursing students and health literacy Turkish Journal of Health Sciences and Research 2022;5(2):19-33. https://doi.org/10.51536/tusbad.1084114

25. Kuloglu Y, Uslu K. The impact of health literacy on the perception of health in the health workers of the future. Dogus University Journal 2022;23(1):255-77. https://doi.org/10.31671/doujournal.955317