



ORIGINAL ARTICLE

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## Health literacy level and related factors of students in a health vocational high school

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### Abstract

Health literacy (HL), by definition, refers to a person's ability to obtain, interpret and comprehend fundamental health information and services in order to enhance their health. In our study, it was aimed to determine HL level of health vocational high school students. The population of this descriptive cross-sectional study consists of students attending a Health Vocational High School (n:337). In May-June 2019, questionnaire form and 'Turkey Health Literacy Scale-32' were applied to students who voluntarily agreed to participate in study. Kolmogorov Smirnov, Mann Whitney U, Kruskal Wallis tests were used in analysis of data. Sixty-eight percent of the pupils were female, while thirty-two percent were male. Study group had a THLQ score of 33.7±8.9, with 53.7 percent of male pupils and 39.5 percent of female pupils having insufficient/limited HL and the difference was significant ( $p<0.025$ ). Insufficient/limited HL was found in 56.4 percent of 9th-10th grade students and 37.4 percent of 11<sup>th</sup>-12<sup>th</sup> grade students and the difference was significant again ( $p<0.0001$ ). The HL levels did not differ from pupils' socio-demographic factors ( $p>0.05$ ). In study group, rate of adequate/perfect HL was higher in women than in men. According to scores of participants from sub-matrix components of scale, level of health literacy is generally sufficient, but sub-dimensions of "Treatment-Service-Evaluation of Information", "Prevention from Diseases-Health Promotion-Evaluation of Information-Using Information", "Assessment of Information about Health" are limited. The insufficiency of medical education in schools is demonstrated by the low level of HL. To enhance awareness of health-related concerns in schools, frequent activities should be planned.

**Keywords:** Health literacy, student, vocational high school

### Introduction

Many definitions of the health literacy have been made so far. The World Health Organization has defined health literacy as follows: "Health literacy represents the cognitive and social skills that determine people's ability to access, understand and use information in a way that encourages and protects their health. HL requires attaining a level of knowledge, personal skills and confidence to take action to improve personal and community health by changing personal lifestyles and living conditions. Therefore, health literacy means more than being able to read brochures and make appointments. Developing people's capacity to access and effectively use health information is critical to strengthening health literacy. Health literacy is basically related to the general literacy and education levels of people directly.

Poor educational level and literacy can directly affect people's health by limiting their personal, social and cultural development and hindering the development of health literacy [1].

Another important factor in evaluating health literacy is cultural background. The individual evaluates the given health information according to his/her own cultural background [2].

Various studies have been carried out to measure HL level in our country. In a study conducted in 2014, the European Union Health Literacy Questionnaire (HLS-EU) was used and it was observed that 2/3 of the population had insufficient HL level [3].

Insufficient levels of health literacy lead to an increase in the incidence of various chronic diseases and misuse of drugs, unnecessary health expenditures, a decrease in the use of primary health care services, and consequently absenteeism from work [4]. Individuals with insufficient health literacy level were found to have low interest in screening and preventive services. As a result, the probability of encountering cancer and other chronic disease in

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their future lives has increased. In addition, unhealthy behaviors such as smoking more and breastfeeding less are present in the same individuals [5].

Insufficient HL levels cause problems in the healing process as a result of non-compliance with the treatment given after the diagnosis and delaying the controls. From the moment the physician prescribes, situations such as how to obtain the drug, how to store it, how to use it, and knowing its possible side effects are related to rational drug use. Rational drug use, on the other hand, is closely related to health literacy [6].

In addition to elements such as education and culture, the impact of health workers on the society is also very important in terms of raising the health literacy level of the society.

Health Services Field of Vocational and Technical High Schools has an important place in training health workers in our country. In this study, it is aimed to measure the health literacy level of Health Vocational High School students and to analyze the factors affecting it.

### Material and Methods

This study, which was conducted between May and July 2019, is a cross-sectional study. The universe was determined from the students continuing their education in a Vocational and Technical Anatolian High School Health Services. Using data from Turkey, the sample size was determined as 337 people by power analysis. Ethics committee approval was obtained from National Education Directorate and Inonu University Scientific Research and Publication Ethics Committee.

A questionnaire with demographic questions and the Turkish Health Literacy Scale (T-SOY 32) were applied to the students

participating in the research. The scale was adapted from the European Health Literacy Scale and its Turkish validity and reliability was performed by Abacıgil et al. in 2016. Internal consistency coefficient of the whole scale is 0.95 and the scale consists of three sub-dimensions (Treatment and Service Health Literacy, Disease Prevention Health Literacy and Health Promotion Health Literacy) [7]. The score which is obtained from the scale was considered insufficient if it was 25 and below, limited if it was 25-33 and sufficient/perfect if it was 33 and above.

The analysis of the data was carried out using the SPSS 22 program. Descriptive data were presented in the form of numbers and percentages, and statistical analyses were carried out using the Kolmogorov Smirnov, Mann Whitney U, Kruskal Wallis tests, with  $p < 0.05$  accepted as the error degree.

### Results

The study group consisted of 68% females and 32% males. The mean age of the participants in the study was  $16.6 \pm 1.1$  (min 14, max 20). Students in grades 9-10 are 34.9% of all students and those in grades 11-12 are 65.1% of all. Those whose mothers are illiterate are 6.6% and those whose mothers had higher education are 3.9%. Those whose mothers are housewives are 91.5%. Those whose fathers are illiterate are 6% and those whose fathers had higher education are 12.9%. The fathers of 1.2% of the students do not work. Those with a monthly income of 2014TL and below are 38.3%, those with 6562TL and above are 3.3%. While 96.1% of the students stay with their family or relatives; 3.3% of them live in dormitories (Table 1). In our study group, according to BMI, 27.1% of the students were underweight, 19.8% were normal weight, 45.1% were overweight, 7.3% were obese, and 0.6% were morbidly obese.

**Table 1.** Distribution of students according to their socio-demographic characteristics

		n	%	Mean
<b>Gender</b>	Male	108	32	32.26
	Female	228	68	34.39
<b>Class</b>	9-10	117	34.9	30.46
	11-12	219	65.1	35.44
<b>Mother education</b>	Illiterate- Literate-Primary Education	235	70.8	33.66
	High school and above	97	29.2	33.73
<b>Father education</b>	Illiterate- Literate- Primary Education	169	51.1	33.59
	High school and above	163	48.9	33.91
<b>Mother occupation</b>	Housewife	302	91.5	33.69
	Other	28	8.5	33.67
<b>Father occupation</b>	Not working	4	1.2	30.59
	Officer-retired	75	22.7	32.60
	Worker	82	24.8	33.67
	Self-employment	170	51.4	34.34
<b>Monthly income</b>	2014 TL and below	126	38.3	33.26
	2015-6561 TL	192	58.4	34.15
	6562 TL and above	11	3.3	32.85
<b>Living place</b>	With family	323	96.1	33.76
	With friends	2	0.6	37.5
	Student hostel	11	3.3	32.19

The rate of smokers among male students is 18.3% and it is significantly higher than female students (6.6%) (p:0.001) (Table 2). While the rate of students in grades 9-10 was 1.7%, the rate of students in grades 11-12 was 15.1% and was found significantly higher (p:0.000). 81.8% of the students stated that they use mobile phones and 85.4% of them use social media. 59.2% of the students stated that they got information from the internet, 5.4% from books, 2.4% from TV programs, 22.5% from health personnel, 9% from school and 1.5% from people in the vicinity.

**Table 2.** Smoking by gender

		Smoking				P
		Yes		No		
		n	%	n	%	
Gender	Male	20	18.3	89	81.7	0.001
	Female	15	6.6	213	93.4	

While the use of mobile phones is 78.7% in those with a mother who had education at secondary school or below, it is 88.5% in those whose mothers had a high school education and above, and there is a significant increase (p:0.037) (Table 3).

**Table 3.** Smartphone use by maternal education

		Smoking				P
		Yes		No		
		n	%	n	%	
Mother education	Middle school and below	185	78.7	50	21.3	0.037
	High school and above	85	88.5	11	11.5	

When we look at the self-evaluation chart in line with the definition of SOY, 23.1% of men evaluated themselves as perfect, while 25.8% of women made the same evaluation (p:0.387). Considering the evaluations for the same definition according to the class groupings, 21.9% of the 9-10 classes and 26.5% of the 11-12 classes made excellent evaluations, and the increase in the 11-12 classes was found to be significant (p:0.042) (Table 4).

**Table 4.** Evaluation of SOY definition by gender and class

		Self-evaluation in line with the definition of SOY						P
		Insufficient		Limited		Perfect		
		n	%	N	%	n	%	
Gender	Male	3	2.8	80	74.1	25	23.1	0.387
	Female	13	5.8	154	68.4	58	25.8	
Class	9-10	10	8.8	79	69.3	25	21.9	0.042
	11-12	6	2.7	155	70.8	58	26.5	

The study group's total TSOY score was found to be 33.78±8.9. (sufficient). 53.7 percent of men and 39.5 percent of women had poor or limited health literacy, and boys have a considerable rising (p:0.025). The rise seen in classrooms 9-10. is significant (p:0.000) because 56.4 percent of 9th and 10th grade pupils and 37.4 percent of 11th and 12th grade pupils had insufficient or limited Health Literacy (Table 5).

In line with the rational drug definition, 47.6% of male students evaluated themselves as excellent, 50.7% of female students evaluated themselves as excellent, and a significant increase was observed in females (p:0.006) (Table 6).

**Table 5.** Comparison of total TSOY scores by gender and class

		Insufficient		Limited		Perfect		P
		n	%	N	%	n	%	
Gender	Male	58	53.7	37	34.3	13	12	0.025
	Female	90	39.5	81	35.5	57	25	
Class	9-10	66	56.4	35	29.9	16	13.7	0.000
	11-12	82	37.4	83	37.9	54	24.7	

According to the participants' TSOY-32 scale score averages; The overall TSOY score of 33.7 (95% CI:32.8-34.5) was considered "Adequate". The sub-dimensions of the scale "treatment and service" scored 34.7 (CI:33.7-35.7); adequate, "prevention from disease and health promotion" 32.7 (CI:31.6-33.9) points; limited, "access to health-related information" score of 35.9 (CI:34.8-37.1); adequate, "understanding health-related information" score of 34.6 (CI:33.4-35.8); adequate, "evaluating health-related information" 29.3 (CI:28.2-30.6) points; limited and "using/ applying health-related knowledge" 34.8 (CI:33.7-36.2) points; determined as sufficient. In addition, the mean score of the sub-component of "Evaluation of treatment and service knowledge" was calculated as 28.4 (CI:26.9-29.6) and it was seen that the SOY level was in the limited category (Table 7).

**Table 6.** Evaluation of rational drug definition by gender

		Self- evaluation in line with the rational drug definition						P
		Insufficient		Limited		Perfect		
		n	%	N	%	n	%	
Gender	Male	0	0	54	52.4	49	47.6	0.006
	Female	18	8	93	41.3	114	50.7	

73.8% of the students stated that they had first aid knowledge (p:0.004), 62.7% of them stated that they could apply first aid, and these rates are significant (p:0.000). When the first aid knowledge is examined according to the class groups, it was seen as 61.2% in the grades 9-10 and 80.4% in the grades 11-12; the increase in grades 11-12 is significant (p:0.000). 78.9% of the students stated that they did not make any medical intervention to someone from their close circle and the rate found is significant (p:0.000). While the rate of medical intervention to someone in the 9-10 grades was 7%, when we look at the 11-12. grades, this rate increased to 28.6% and this difference is statistically significant (p:0.000). 63.3% of males and 62.4% of females stated that they could make an emergency response. Considering the 9-10. grades, the rate of emergency intervention is 44.8%, and 72% in the 11-12. grades. The difference is significant (p:0.000).

**Table 7.** SOY levels of students according to the mean scores of TSOY-32 matrix components

	Mean	%95 Confidence Interval		SOY Level
<b>General</b>	33.71	32.87	34.50	Perfect
<b>Treatment and Service</b>	34.72	33.72	35.76	Perfect
Access to Information	37.17	35.93	38.53	Perfect
Understanding Information	34.45	33.21	35.59	Perfect
Evaluating Information	28.44	26.97	29.60	Limited
Using/ Applying of Knowledge	38.81	37.70	40.00	Perfect
<b>Disease Prevention and Health Promotion</b>	32.70	31.68	33.99	Limited
Access to Information	34.67	33.31	35.88	Perfect
Understanding Information	34.91	33.49	36.12	Perfect
Evaluating Information	30.33	28.91	31.71	Limited
Using/ Applying of Knowledge	30.89	29.62	32.27	Limited
<b>Accessing Health-Related Information</b>	35.93	34.89	37.11	Perfect
<b>Understanding Health-Related Information</b>	34.68	33.42	35.80	Perfect
<b>Evaluating Health-Related Information</b>	29.39	28.23	30.62	Limited
<b>Using/Applying of Health-Related Knowledge</b>	34.85	33.72	36.02	Perfect

## Discussion

According to the rate of self-evaluation in line with the definition of SOY, 23.1% of men evaluated themselves as perfect, while 25.8% of women made the same evaluation. In general, 317 (95.19%) of 333 participants in the study evaluated themselves as partially sufficient and excellent in line with the definition of SOY. In a study, conducted by Ivanitskaya et al., 258 of 306 (84%) university students who participated in the survey perceived their health literacy skills as “good”, “very good” or “excellent”, but when the real health literacy skills of the students were evaluated according to the 56-item scale, it was seen that they were very weak (mean 37%, SD 6.4%). In the same study, it was observed that although students mostly have easy access to health information on the internet, many students have poor health literacy skills related to searching, recalling, using and evaluating information sources [8]. It can be planned to provide more education to students on health literacy and to increase the course hours taught on this subject.

Some studies show that there is a relationship between education and functional health literacy level [9,10,11]. In our study, as the education level increases, Health Literacy rates increase significantly between classes ( $p < 0.0001$ ).

Health literacy was found to be insufficient or limited in 53.7 percent of male pupils and 39.5 percent of female pupils in this survey. In a survey of 384 students conducted in Brazil, 68.7% of those with strong health literacy were women and 31.3 percent were men. Most research points to better health literacy for women [12]. Only one study showed better health literacy in men and linked this finding to a lower education level of the women participating [13]. In this study, no statistically significant relationship was found between health literacy and gender.

In our study, 81.8% of the students stated that they used mobile phones and 85.4% stated that they used social media. 53.7 percent of men and 39.5 percent of women have inadequate or restricted health literacy, according to the TSOY score of the research group.

There are different studies showing a relationship between high smartphone usage, long screen time, and poor health literacy levels. A study of secondary school students in China showed that low health literacy, longer screen time, and low mental growth were positively associated with depressive symptoms. ( $p < 0.05$ ). With the increase in screen time, the rate of detecting depressive symptoms in secondary school students increased and their health literacy level was observed to be low 51.7% (30/58) (OR 5.741) [13]. Families can be reminded that children in the developmental age can use screen time in a controlled manner and different ways of accessing information can be used.

Especially the way of accessing information is of great importance in developing and applying health literacy. In our study, 59.2% of the students stated that they got information from the internet, 5.4% from books, 2.4% from TV programs, 22.5% from health personnel, 9% from school and 1.5% from people in the surrounding. Looking at the percentage of college students who use the internet to obtain health information from 3 studies in the United States, 91 (67%) of 136 respondents, 549 (73.9%) of 743, and 24 (71%) of 34 used the internet to search for health information [14]. The high rate of internet usage seen here may be due to the fact that information can be accessed more easily in this way, private information can be accessed without sharing it with others (health personnel, etc.), and the use of smartphones/social networks has increased recently. It is stated that the internet, as a research method and a form of written expression, is more suitable for reaching sensitive, stigmatized or disturbing health problems [15]. In our country, it can be ensured that the internet is more accessible in terms of health information research.

In a study conducted among high school students in Iran, a statistically significant relationship was found between health literacy and family income ( $p < 0.03$ ) and education level of parents ( $p < 0.001$ ) [16]. A cross-sectional study of African-American adolescents also provides data showing that maternal education is an important determinant of low health literacy [17]. However,

in our study, there was no significant relationship between family income, education level of parents and health literacy ( $p>0.05$ ).

In a study conducted among university students in Jordan, it was revealed that non-smokers have higher health literacy than smokers [18]. In our study, the rate of smokers among male students was 18.3% and it was significantly higher than female students (6.6%). However, there was no significant difference between smokers and non-smokers according to the total TSOY score ( $p>0.05$ ).

Health literacy has been associated with overall health ratings, BMI-based weight status, and unhealthy diet. Our findings on general health assessment and malnutrition are new in the adolescent health literacy literature. The finding on weight status is consistent with a study showing that limited health literacy is associated with greater weight among overweight children [18]. However, in our study group, the rate of underweight (27.1%) and normal (19.8%) students was 46.9%, and health literacy rates were found to be sufficient (overweight: 45.1%, obese: 7.3%, morbidly obese: 0.6%).

In our study, it was observed that 96.1% of the students stayed with their family and relatives, and the health literacy level of the study group was sufficient. In a study conducted in Brazil, 81% of the students staying at their own homes were found to have good health literacy levels [14]. This may confirm the hypothesis that students who feel safe in terms of accommodation can develop better in terms of focusing on research and lessons.

Some studies suggest that adolescents, especially those with chronic diseases, have relatively better health literacy levels because they are more familiar with the medical system or socialize for a longer period of time through media and interpersonal experiences on health [17]. On the other hand, other studies show that associating health literacy with quality of life and sociodemographic factors contributes to the discussion on the subject even without chronic pathologies [14]. In our study, the rate of students with chronic diseases was 8.7%, and the health literacy scores of these students were found to be sufficient.

While our study was conducted on individuals over the age of 14, the study we took as a reference was made on individuals over the age of 15. This is due to the fact that we cannot reach sufficient literature data.

Inadequate health literacy causes an increase in the incidence of many chronic diseases and wrong/unnecessary drug use, unwarranted health expenditures, a decrease in the utilization of primary health care services, and thus loss of workforce. The loss of workforce poses a problem both for the people in the society and for the state. Inadequate health literacy is a situation that puts an extra burden on society in terms of both psychological and cost.

## Conclusion

Inadequate Health Literacy is a serious public health problem as it limits adolescents' ability to communicate their concerns to health providers, understand and follow providers' instructions, and utilize health services. Health promotion education should be tailored to the health literacy level of adolescents. Increasing literacy in adolescents requires serious effort, and achieving this will have significant public health benefits.

## Conflict of interests

*The authors declare that there is no conflict of interest in the study.*

## Financial Disclosure

*The authors declare that they have received no financial support for the study.*

## Ethical approval

*Ethics committee approval was obtained from National Education Directorate and Inonu University Scientific Research and Publication Ethics Committee*

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