



## **Evaluation of Health Literacy Levels in Adults: The Case of Ankara Province**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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### **ABSTRACT**

The concept of health literacy, which is related to issues such as health behaviors, use of health services, satisfaction, has increased in national and international level in recent years. This concept refers to the individual's cognitive and social skills in health-related issues. The aim of this study is to determine the health literacy levels of individuals living in Ankara. The study was carried out with 387 volunteers. In the study, Adult Health Literacy Scale (AHLs), which consists of 23 questions developed by Sezer, was used. Mann Whitney U and Kruskal Wallis test were used to analyze the data. The average level of health literacy obtained in the study was formulated in accordance with the European Health Literacy Study and the level of international competence was determined. Accordingly, 50.1% (194) of the participants in the study were found to be inadequate, 42.1% (163) limited and 7.8% (30) sufficient health literacy. The level of perfect health literacy has not been found. In order to increase the level of health literacy, roadmaps developed jointly by policy makers and health professionals are needed. As the impact of culture on health literacy is known, developing local strategies is thought to be an effective way to increase the level of health literacy. It is important for healthcare professionals, public health professionals and health educators working in primary health care services to take roles in targeting the target population, developing strategy and communicating in the health literacy process.

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## 1. INTRODUCTION

Healthcare services is an area where the decision-making role is undertaken by the physician owing to the information asymmetry in this field. However, with the emergence of value-based and holistic approaches, individuals' participation has gained more importance in recent years. Health literacy, which is key to the success of health promotion, public health and health education policies, improves access to health-related information, enhances the ability to understand and use such information, and empowers the individual to participate in the process.

According to the definition of the World Health Organization (WHO), health literacy represents 'the cognitive and social skills which determine the ability of individuals to access, understand and use information in ways which promote and maintain good health' [1]. Over time, verbal communication skills such as listening and speaking, as well as cognitive and social skills, have been associated with health literacy [2]. Nutbeam [3] has stratified health literacy into 3 levels: functional, interactive and critical. The first level, i.e. functional health literacy, covers information on health risks and conventional health education outputs such as the skill to utilize the healthcare system. At the interactive health literacy level, the main focus is on developing personal skills in a supportive environment. The critical level includes supportive social and policy actions together with outputs related to cognitive development.

Sufficient level of health literacy refers to being able to apply literacy skills to health-related materials such as prescriptions, appointment cards, package leaflets, and instructions for home-based healthcare [4]. Furthermore, an adequate level of health literacy is required for health-related outputs such as access to healthcare services, interaction with healthcare providers, self-care and the health of others, and participation in health-related decision-making processes [5]. On the other hand, an insufficient level of health literacy is known to have negative consequences such as increased healthcare costs, unnecessary use of healthcare services, inequality in health, abuse of resources, and unsuitable service preference [6]. Therefore, policies exercised at the national and international level aim to improve the health

literacy levels of individuals. WHO states that improving health literacy in the society provides the basis for citizens to play an active role in improving their own health, successfully manage health-related actions, and push governments to fulfill their responsibility of providing adequate healthcare services and health equity [7]. On the other hand, the 2030 agenda of sustainable development goals emphasize that health literacy and other policies may facilitate achieving targets such as tackling poverty and hunger, improving education, economic growth, innovation, reducing inequalities and empowering justice [8].

The health literacy level of individuals is influenced by socio-demographic characteristics such as age, gender, education, ethnic origin and language, as well as cultural aspects and the approach of healthcare professionals [9,10,11]. In this context, it is necessary to conduct population-based studies to demonstrate the effects of socio-demographic variables on health literacy, develop policies to increase the level of literacy, and revise relevant policies as appropriate. The present study aims to determine the health literacy level of individuals living in the province of Ankara and investigate the relationship between demographic variables and health literacy.

## 2. METHODS

### 2.1 Population and Sample

The target population of the study consists of individuals living in Ankara. According to Yamane [12], a minimum of 384 subjects suffice to provide an adequate sample with 0.95 reliability in cases where the target population includes more than one hundred thousand individuals. In this study, sample selection was based on the random sampling method and a total of 387 individuals were included in the sample on a voluntary basis. The study was carried out between February and March 2019.

### 2.2 Data Collection Tool

A survey form consisting of three sections was used in the study. The first section included questions concerning the demographics of participants and the second section covered questions on participants' use of healthcare services. The 'Health Literacy Scale for Adults'

(HLSA) developed by Sezer and Kadioğlu [13] was used in the third section. Investigators performed a validity-reliability analysis and determined that the overall content validity index of the scale was 90.71%. The scale in question consists of 23 items. The minimum and maximum scores of the scale are 0 and 23, respectively. Higher scores indicate increased health literacy.

### 2.3 Analysis

The data collected in the study were analyzed with the SPSS statistical software. The analysis

revealed that the data did not have normal distribution. In the analysis of the data, descriptive statistics such as mean and standard deviation, frequency and percentage were utilized as well as Mann-Whitney U and Kruskal-Wallis tests. Chi-square ( $\chi^2$ ) test was used to determine the relationship between categorical variables.

### 3. RESULTS

Socio-demographics of the participants are presented in Table 1.

**Table 1. Socio-demographic variables of the participants**

<b>Socio-Demographic Characteristics</b>		<b>Number (n)</b>	<b>Percentage (%)</b>
<b>Gender</b>	Female	218	56,33
	Male	169	43,67
<b>Marital Status</b>	Married	158	40,83
	Single	229	59,17
<b>District</b>	Çankaya	75	19,38
	Keçiören	76	19,64
	Yenimahalle	75	19,38
	Mamak	74	19,12
	Etimesgut	87	22,48
<b>Age</b>	18-24	156	40,31
	25-31	64	16,54
	32-38	54	13,95
	39-45	49	12,66
	46-52	29	7,49
	53-60	20	5,17
	61+	15	3,88
<b>Education Level</b>	Primary school	65	16,80
	High school	184	47,55
	Vocational School	45	11,63
	Bachelor	86	22,22
	Master	4	1,03
	PhD	3	0,78
<b>Occupation</b>	Civil Servant	47	12,14
	Health professional	10	2,58
	Self-employed	41	10,59
	Worker	74	19,12
	Retired	21	5,43
	Housewife	52	13,44
	Student	121	31,27
	Unemployment	21	5,43
<b>TOTAL</b>		<b>387</b>	<b>100,00</b>

**Table 2. Average Health literacy scale score by socio-demographic variables**

Variables		Average	SD	P
<b>Gender</b>	Female	11,50	2,85	0,729*
	Male	11,30	3,13	
<b>Marital Status</b>	Married	11,00	3,23	0,054*
	Single	11,70	2,75	
<b>District</b>	Çankaya	12,80	2,25	<0,001**
	Keçiören	11,54	2,63	
	Yenimahalle	11,19	2,95	
	Mamak	9,80	3,22	
	Etimesgut	11,72	2,97	
<b>Age</b>	18-24	12,00	2,49	0,059**
	25-31	11,50	2,57	
	32-38	10,50	3,06	
	39-45	11,10	3,79	
	46-52	11,30	3,40	
	53-60	11,10	3,16	
	61+	10,20	3,78	
<b>Education Level</b>	Primary school	9,37	2,90	<0,001**
	High school	11,65	3,10	
	Vocational School	11,58	2,36	
	Bachelor	12,24	2,29	
	Master	13,75	2,06	
	PhD	13,33	4,04	
<b>Occupation</b>	Civil Servant	11,77	2,48	<0,001**
	Health professional	15,20	2,78	
	Self-employed	9,71	2,57	
	Worker	10,86	3,34	
	Retired	11,86	3,50	
	Housewife	10,46	3,17	
	Student	12,22	2,30	
	Unemployment	11,52	2,86	

The mean score of the participants was 11.42±2.97, with minimum 3 points and maximum 18 points. Distribution of participants' mean HLSA scores by socio-demographics is given in Table 2. No significant association was observed between health literacy and gender, marital status, or age groups. A significant relationship was seen between health literacy scores and the district the participants lived in (p<0.001), their education level (p<0.001) and occupation (p<0.001). Health literacy scores were higher in residents of Çankaya, those with postgraduate degree (master, PhD) and healthcare professionals.

In order to allow comparison of the study results at international level, the HLSA scores were standardized using the Formula=Index = (arithmetic mean-1) x [50/3] from the European Health Literacy Survey. Similar to the European Health Literacy Survey, the scores were categorized into four groups as follows:

0 – 25 Points:	Insufficient health literacy
>25 – 33 Points:	Problematic (limited) health literacy
>33 – 42 Points:	Sufficient health literacy
>42 – 50 Points:	Perfect health literacy

Distribution of participants' mean scores of HLSA international level by socio-demographic variables is presented in Table 3. Health literacy was found to be insufficient in 50.1% (194) of the subjects included in the study, limited in 42.1% (163) and sufficient in 7.8% (30). None of the participants had perfect health literacy.

Health literacy levels determined by HLSA scores were not significantly associated with gender and marital status. A significant relationship was seen between health literacy levels determined by HLSA and the district the participants lived in (p<0.001), age groups

(p=0.017), education level (p<0.001) and occupation (p<0.001).

Table 4 presents the mean health literacy scores of the participants according to their answers to the questions on the use of healthcare services. There was no significant difference between the answers to the question, 'Do you have difficulty in applying to a healthcare institution or getting the services related to your health problems?' The answers revealed that the participants with a

higher level of health literacy knew how to make an appointment at a hospital, followed health-related news, read health-related newspapers/magazines, had no difficulty reading and understanding health-related pamphlets, knew patient rights when receiving healthcare services, had no problem describing their health problems to a doctor/nurse and were comfortable with asking the doctor/nurse questions about their health condition.

**Table 2. Distribution of HLSA international level by socio-demographic variables**

Variables	Insufficient		Problematic		Sufficient		P	
	n	%	n	%	n	%		
<b>Gender</b>	Female	112	51,4	87	39,9	19	8,7	0,514
	Male	82	48,5	76	45,0	11	6,5	
<b>Marital Status</b>	Married	89	56,3	58	36,7	11	7,0	0,128
	Single	105	45,9	105	45,9	19	8,3	
<b>District</b>	Çankaya	22	29,3	47	62,7	6	8,0	<0,001
	Keçiören	35	46,1	37	48,7	4	5,3	
	Yenimahalle	42	56,0	27	36,0	6	8,0	
	Mamak	52	70,3	19	25,7	3	4,1	
<b>Age</b>	Etimesgut	43	49,4	33	37,9	11	12,6	<0,001
	18-24	62	39,7	82	52,6	12	7,7	
	25-31	39	60,9	20	31,3	5	7,8	
	32-38	32	59,3	20	37,0	2	3,7	
	39-45	27	55,1	14	28,6	8	16,3	
	46-52	14	48,3	14	48,3	1	3,4	
	53-60	11	55,0	9	45,0	0	0,0	
	61+	9	60,0	4	26,7	2	13,3	
<b>Education Level</b>	Primary school	49	75,4	15	23,1	1	1,5	0,017
	High school	90	48,9	74	40,2	20	10,9	
	Vocational School	21	46,7	22	48,9	2	4,4	
	Bachelor	31	36,0	50	58,1	5	5,8	
	Master	1	25,0	2	50,0	1	25,0	
	PhD	2	66,7	0	0,0	1	33,3	
<b>Occupation</b>	Civil Servant	23	48,9	22	46,8	2	4,3	<0,001
	Health professional	2	20,0	3	30,0	5	50,0	
	Self-employed	31	75,6	9	22,0	1	2,4	
	Worker	44	59,5	26	35,1	4	5,4	
	Retired	7	33,3	11	52,4	3	14,3	
	Housewife	33	63,5	16	30,8	3	5,8	
	Student	44	36,4	68	56,2	9	7,4	
	Unemployment	10	47,6	8	38,1	3	14,3	
<b>TOTAL</b>	<b>194</b>	<b>50,1</b>	<b>163</b>	<b>42,1</b>	<b>30</b>	<b>7,8</b>		

**Table 3. Health literacy scores based on questions about use of health care services**

Variables		n	%	HLSA		p
				Average	SD	
1- Do you know how to make an appointment at the hospital?	Yes	362	93,54	11,60	2,89	<b>&lt;0,001</b>
	No	25	6,46	8,56	2,75	
2- Do you follow the news about health?	Yes	227	58,66	12,60	2,61	<b>&lt;0,001</b>
	No	160	41,34	9,71	2,58	
3- Do you read health related newspapers / magazines?	Yes	132	34,11	13,10	2,58	<b>&lt;0,001</b>
	No	255	65,89	10,60	2,80	
4- Do you have difficulty in reading and understanding health brochures?	Yes	84	21,71	10,40	3,39	<b>0,001</b>
	No	303	78,29	11,70	2,79	
5- Do you know what your patient rights are while receiving health care?	Yes	256	66,15	12,20	2,71	<b>&lt;0,001</b>
	No	131	33,85	8,89	2,87	
6- Do you have difficulty in telling your doctor / nurse about your health problem?	Yes	67	17,31	10,60	3,47	<b>0,018</b>
	No	320	82,69	11,60	2,83	
7- Do you have difficulty in applying to a healthcare institution or getting the services related to your health problems?	Yes	100	25,84	11,80	3,22	0,092
	No	287	74,16	11,30	2,87	
8- Can you easily ask the doctor / nurse about your health status?	Yes	322	83,20	11,70	2,89	<b>&lt;0,001</b>
	No	65	16,80	9,86	2,88	

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	No	65	16,80	9,86	2,88	

#### 4. DISCUSSION

Increasing costs, access-related difficulties and problems with resource distribution in healthcare services have revealed the importance of preventive healthcare services and health promotion activities rather than investments in

treatment services in recent years. Empowering the infrastructure of primary healthcare services, utilizing health information technologies and ensuring that individuals participate in health-related processes by taking responsibility have become an indispensable agenda of healthcare policies. In this context, the concepts of health

education and health literacy have started to become a priority field that is supported by both national and international strategies.

In order to increase the level of health literacy in the population with a community-based perspective, individuals, healthcare professionals and policy makers all need to fulfill their respective roles since an increased level of health literacy improves the communication between the individual and the healthcare staff, leading to improved health outcomes.

In the present study, health literacy levels of residents of Ankara province were investigated. According to the results of the survey, the mean adult health literacy score of the participants was  $11.42 \pm 2.97$  points. Health literacy level was insufficient in 50.1% of the participants, limited in 42.1% and sufficient in 7.8%. Among the similar studies performed with the health literacy scale for adults, Dinçer and Kurşun [14] reported a mean adult health literacy score of  $14.31 \pm 2.60$  in university students. İnkaya and Tüzer [15] found this score as  $16.9 \pm 3.2$  in university students from Health and Social Sciences while Gül et al. [16] reported a score of  $13.9 \pm 2.65$  in a sample consisting of university students in vocational school. In a study conducted in Iran with 250 subjects, 50.4% of the participants were found to have an insufficient level of health literacy, and a study in 386 students in the field of health revealed that 50.5% of the participants had sufficient health literacy levels [17,18]. A study conducted with 1164 individuals in China concluded that 17.6% of the study participants had a sufficient level of health literacy [19]. In a study carried out in Catalonia, 84.6% of the participants were found to have sufficient health literacy level [20]. It is noted that similar studies conducted with participants with different socio-demographic characteristics in different countries yield different results. For this reason, it appears important to consider these differences when determining the programs and strategies related to health literacy.

In the present study, no significant relationship was observed between gender and health literacy levels. Similar results were reported in studies conducted with different groups such as patient relatives and students in the national literature [21,22,23]. A study conducted in Italy concluded that women are more competent than men in terms of access to health information, although without a statistically significant difference (Plaumbo et al., 2016). In another

study conducted in Northern Italy, no significant difference was found between gender and health literacy [24]. A study carried out with 150 patients at a public hospital in China concluded that the level of health literacy is lower in men compared to women [25]. In a study conducted with university students in Lithuania, health literacy level was found to be lower in male students than that in female students [26].

This study investigated the relationship between health literacy level and levels of healthcare use. Participants with a high level of health literacy were found to be competent in making appointments, asking questions to healthcare professionals and follow health-related news and written and visual media. Similarly, a study investigating health literacy and patient satisfaction reported higher satisfaction in participants who had higher levels of health literacy [27]. In another study, a significant correlation was shown between high levels of health literacy and patient satisfaction [28]. Taken together, these results show that improving health literacy is an important criterion to ensure efficient conduct of healthcare services and improve satisfaction among individuals who use healthcare services.

The fact that scores obtained from the scale developed by Sezer were made comparable using the formula described in the European health literacy survey is important in terms of evaluation and interpretation of the results of the present study. The level of sufficient and excellent health literacy determined as 7.8% in this study is an important indicator of the need for education among the participants.

Since this study is limited to the province of Ankara, the results cannot be generalized. However, we believe these findings will contribute to the studies to be conducted on similar subject areas in the future. Studies investigating health literacy in different provinces and in groups with different socio-demographics are expected to help achieving successful outcomes and resolve the deficiencies in relevant practices at national level.

## 5. CONCLUSION

Roadmaps developed by policy makers and healthcare professionals are needed in order to

increase health literacy levels. Since studies in the national and international literature have clearly demonstrated the effect of culture on health literacy, we believe developing local strategies may offer a more effective means of improving health literacy levels. On the other hand, raising awareness on health literacy at every stage of education and improving knowledge through collaboration with schools would allow a more sustainable process and contribute to developing health culture starting from a young age. Developing special training programs for specific groups such as individuals with chronic disease and caretakers may facilitate increasing health literacy, thereby improving the quality of healthcare services. Active use of social media and digital systems in health literacy training would be useful in providing faster and easy access for individuals. Primary healthcare services and health promotion undoubtedly play a key role in healthcare policies that have been developed with the aim of 'healthy individual, healthy society' at global level in recent years. Therefore, it is crucial that healthcare professionals involved in primary healthcare, public health specialists and health educators are involved in setting population-based targets, developing strategies and ensuring communication in the health literacy process.

## CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

## ETHICAL APPROVAL

It is not applicable.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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