Exploring health literacy and associated factors among individuals registered in family health centers in Batman province

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ABSTRACT

Aims: Health literacy is often defined as one's capacity to obtain, interpret, and understand basic health information and services to preserve, improve, or recover their health and their ability to make the right choices regarding their health. In this study, we attempted to explore health literacy and associated factors among individuals registered in primary health centers.

Methods: We carried out this cross-sectional study with individuals registered in family health centers in Batman province between October 2018 and March 2019. After obtaining ethical approval from the relevant ethics committee, we collected the data from the participants with a sociodemographic information form and the Turkish version of the European Health Literacy Survey Questionnaire (HLS-EU-Q).

Results: Our findings revealed that 62.3% (n=301) of the participants were females, 52.0% (n=251) held an undergraduate or higher degree, and 17.6% (n=85) had a high monthly income. The participants' mean age was 33.1±11.8 years (18-78 years), and 62.1% (n=300) were younger than 35 years. We discovered that the younger participants (p=0.003), those with higher educational attainment (p=0.001), and those without chronic disease (p=0.005) had significantly greater health literacy. Given gender and other sociodemographic characteristics demonstrating significant relationships with health literacy, our logistic regression findings also showed that income level, perceived socioeconomic and health status, and reading enjoyment had significant impacts on the participants' sufficient/excellent health literacy level.

Conclusion: Thus, the results of this research and prospective studies would further facilitate developing policies for boosting health literacy to protect public health and alleviate inequalities in accessing healthcare services.

Keywords: Health literacy, primary care, research

INTRODUCTION

Although advancements in science and technology have improved the diagnosis and treatment capacity in modern medicine, preventive medicine practices in primary care are recognized as fundamental in preventing and treating diseases.[1] In addition to environmental and genetic factors, one's health-oriented behaviors become key in preventing disorders and promoting health.[2] Moreover, healthcare systems expect individuals to undertake the responsibility of preserving their health, understanding essential medical information, and making decisions for their health to some extent, which underlines the concept of health literacy.[1]

The concept of health literacy has emerged to explain the impact of health education and communication on health outcomes.[3] It is indeed grounded on social, personal, and cognitive skills required for reading, numerical processing, problem-solving, decision-making, information seeking, and interacting to function in the healthcare system.[4] Health literacy was first coined in the 1970s and has been subjected to different definitions since then. In 2013, the World Health Organization (WHO) defined health literacy as: "Health literacy is linked to one's knowledge, motivation, and competence to access, understand, evaluate, and practice health information to make judgments and decisions regarding health care, disease prevention, and health promotion to maintain or improve their quality of life throughout their lives.".[5] Finally, it was defined in 2020 as: "Health literacy is the degree to which individuals can find, understand, and use information and services to inform themselves and others about health-related decisions."[6]

It may be essential to reveal the health literacy level in a community to improve the health of every citizen and plan an appropriate allocation of healthcare services.[7,8] In addition, an increase in community-wide health literacy is

thought to end up with the more efficient use of healthcare services.[4,9] Besides, uncovering health literacy levels and associated factors among people may play a significant role in alleviating inequalities in accessing healthcare services.[10] Apparent societal factors (e.g., healthcare and education systems and sociocultural characteristics) are known to affect one's demand for healthcare services as well as their perceptions of and behaviors about their health, highlighting an evident need for efforts to contribute to individuals' health literacy.[11] Therefore, the present study attempted to explore health literacy and associated factors among individuals registered in primary family health centers in Batman province. Thus, we think that new health policies can be developed for more efficient use of healthcare services by revealing the levels of health literacy among people and related factors.

METHODS

The study was carried out with the permission of the Batman Province Public Hospital Clinical Researches Ethics Committee (Date: 13.06.2018, Decision No: 111).   All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki.

We carried out this cross-sectional study with individuals registered in family health centers in Batman province between October 2018 and March 2019. According to TUIK 2017 data, 411251 (206665 male, 204586 female) people older than 18 years reside in the center of Batman Province (www.tuik.gov.tr) and this population had been taken into consideration for sample size. Using the G*Power 3.1.9.7 program, we calculated the minimum sample size to be attained as 220 at a 95% confidence interval (CI) and type I error level of 0.05 within a Batman-based population older than 18 years. In calculating the sample size, since health literacy was mostly evaluated by dividing into groups according to literacy levels in previous studies, the chi-square test as a proportion-based statistical method and the medium effect size in more than two groups were taken into account. Stratified random sampling method according to age, gender, income and social status, was used in the selection of the sample. Accordingly, we recruited 483 participants for the study upon obtaining their written and verbal consent. Persons who were literate, had no mental problems that could affect their understanding or perception of reality, and agreed to fill out the questionnaire were included in the study.

Then, we collected the data using a sociodemographic information form covering questions about participants' sociodemographic characteristics, general health status, and use of healthcare institutions and the Turkish version of the European Health Literacy Survey Questionnaire (HLS-EU-Q).[2]

We grouped the participants' ages and categorized their reading enjoyment and perceived socioeconomic status (SES) scored between 1-10. Moreover, we calculated their body mass indexes (BMI) by dividing their body weights in kilograms by the square of their heights in meters and categorized BMIs as normal-underweight (<25.0) and overweight-obese (≥25.0).

The European Health Literacy Project Consortium designed the HLS-EU-Q as a self-report instrument to assess people's health literacy levels.[12] In their study, Abacıgil et al. explored the validity and reliability of the HLS-EU-Q in the Turkish context and reported the internal consistency of the scale (Cronbach's α) to be 0.95.[13,14] In this study, the internal consistency coefficient of the scale was calculated as 0.968 (quite reliable). The 4-point Likert-type instrument (1=Very difficult, 4=Very easy) consists of 47 items within three subscales (health care, disease prevention, and health promotion). Whereas one can obtain a minimum of 47 points and a maximum of 188 points, we standardized the total score between 0 (lowest health literacy) and 50 (highest health literacy) points, as in the original study, for ease of calculation using the following formula:

Index=[mean score-1 (lowest possible value of the mean)] × [50/3 (range of mean score)]

Accordingly, we evaluated the participants' health literacy levels in the following four categories by their HLS-EU-Q scores:

- 0-25: insufficient health literacy
- >25-33: problematic/restricted health literacy
- >33-42: sufficient health literacy
- >42-50: excellent health literacy

While presenting continuous variables as means (M) and standard deviations (SD), we demonstrate categorical variables as numbers (n) and percentages (%). A series of chi-square tests were performed to compare participants' health literacy levels by their sociodemographic characteristics. We dichotomized the four categories of health literacy as insufficient/problematic health literacy and sufficient/excellent health literacy and performed a multivariate binary logistic regression analysis to the variables with statistically significance level of p <0.25 in univariate analyses to uncover the predictors of sufficient/ excellent health literacy. We analyzed the data using SPSS 26.0 (IBM Corp., Armonk, NY, USA) Program and accepted a p-value of <0.05 as statistically significant.

RESULTS

We found that 62.3% (n=301) of the participants were females, 52.0% (n=251) held an undergraduate or higher degree, and 17.6% (n=85) had a high monthly income.

Bulut Çelik et al. Exploring health literacy and associated factors

J Med Palliat Care. 2023;4(5):478-484

The participants' mean age was 33.1±11.8 years (18-78 years), and 62.1% (n=300) were younger than 35 years. The participants' sociodemographic characteristics are presented in **Table 1**. While 190 participants (39.4%) perceived their SES as good, the rate of those perceiving their health status as excellent was 23.8% (n=115). Besides, 136 (28.2%) reported receiving assistance while reading and writing, and 70 (14.5%) had no reading habit.

When it comes to the participants' scores on the HLS-EU-Q, we found that while 41.8% (n=202) of the participants had insufficient/problematic health literacy, 38.7% (n=187) had sufficient/excellent health literacy (sufficient health literacy with 26.1% (n=126) and excellent health literacy with 12.6% (n=61); **Table 2**). Our findings demonstrated that the younger participants (p=0.003), those with higher educational attainment (p=0.001), and those without chronic disease (p=0.005) had significantly greater health literacy (**Table 3**). Moreover, we found significantly higher health literacy levels in those with high perceived SES (p<0.001), those with high reading enjoyment (p<0.001), those with a reading habit (p=0.001), and those with excellent perceived health (p<0.001; **Table 3** and **Table 4**).

Table 2. Participants' scores on the HLS-EU-Q and its subscales					
Scores	**M±SD**	**Insufficient n (%)**	**Problematic n (%)**	**Sufficient n (%)**	**Excellent n (%)**
Health care	33.1±8.5	79 (16.4)	157 (32.5)	171 (35.4)	76 (15.7)
Disease prevention	33.3±9.7	105 (21.7)	172 (35.6)	135 (28.0)	71 (14.7)
Health promotion	30.4±10.0	146 (30.2)	134 (27.7)	143 (29.6)	60 (12.4)
Total score	31.6±8.7	94 (19.5)	202 (41.8)	126 (26.1)	61 (12.6)

Considering gender and other sociodemographic characteristics that yielded significant results in univariate analyses, our regression results also showed that income level, perceived SES and health status, and reading enjoyment had significant effects on the participants' sufficient/excellent health literacy level (**Table 5**). Accordingly, sufficient/excellent health literacy was nearly twice as high for those with monthly income surpassing their expenditures than those without (Odds Ratio (OR)=1.925; 95% CI=1.052-3.521; p=0.034), 2.5 times as high for those with excellent perceived health than those with bad perceived health (OR=2.564; 95% CI=1.384-4.751; p=0.003), twice as high for those with high perceived SES than those with low perceived SES (OR=2.016; 95% CI=1.154-3.525; p=0.014), and twice as high for those with moderate reading enjoyment (OR=2.244; 95% CI=1.090-3.758; p=0.026) and 2.1 as high for those with high reading enjoyment (OR=2.143, 95% CI=1.158-3.966; p=0.015) compared to those with poor reading enjoyment.

Table 1. Participants' sociodemographic characteristics			
Characteristics	**n**	**%**	**M±SD**
Gender			
Male	182	37.7%	
Female	301	62.3%	
Age (years)			33.1±11.8 (18-78)
18-24	123	25.5%	
25-34	177	36.6%	
35-44	109	22.6%	
45-54	44	9.1%	
≥55	30	6.2%	
Educational attainment			
High school and below	232	48.0%	
Undergraduate and above	251	52.0%	
Marital status			
Married	291	60.2%	
Unmarried	251	39.8%	
Place of residence (the longest time)			
Village/Town	38	7.9%	
City	381	78.9%	
Metropolitan city	64	13.3%	
Occupation			
Civil servant	220	45.5%	
Student	80	16.6%	
Other	183	37.9%	
Household income			
Income < Expenditures	159	32.9%	
Income=Expenditures	239	49.5%	
Income > Expenditures	85	17.6%	
BMI			24.4±4.3
< 25.0	303	62.7%	
≥ 25.0	180	37.3%	
Chronic disease			
Yes	84	17.4%	
No	399	82.6%	
Number of households			4.9±2.4 (1-17)
1-3	149	30.8%	
6-7	186	38.6%	
8-10	148	30.6%	
Health insurance			
No or Green Card	59	12.2%	
Yes	424	87.8%	
Perceived social status (1 to 10)			6.8±2.0
1-5	132	27.3%	
6-7	161	33.3%	
8-10	190	39.4%	
Receiving assistance while reading and writing			
Sometimes/Always	136	28.2%	
Seldom/Never	347	71.8%	
Reading enjoyment (1 to 10)			6.5±2.8
1-4	121	25.1%	
5-7	163	33.7%	
8-10	199	41.2%	
Frequency of reading			
Never	70	14.5%	
Sometimes/Frequently	413	85.5%	
Perceived health status			
Excellent	115	23.8%	
Good/Fair	229	47.4%	
Bad	139	28.8%	
The most trusted source of health information			
Healthcare workers	335	69.4%	
Other	148	30.6%	
Preliminary healthcare provider			
Family health centers	164	34.0%	
State hospitals	185	38.3%	
Private hospitals	134	27.7%	
Frequency of application to health institutions			
≤1 per month	405	83.9%	
>1 per month	78	16.1%	

Table 3. Participants' scores on the HLS-EU-Q and its subscales by their sociodemographic characteristics

Sociodemographic characteristics	HL Score M±SD	Insufficient n (%)	Problematic n (%)	Sufficient n (%)	Excellent n (%)	p*
Gender						0.610
Male	31.8±8.8	30 (16.5)	78 (42.9)	51 (28.0)	23 (12.6)	
Female	31.5±8.6	64 (71.3)	124 (41.2)	75 (24.9)	38 (12.6)	
Age (years)						0.003
18-24	32.0±7.7	20 (16.3)	54 843.9)	36 (29.3)	13 (10.6)	
25-34	32.4±8.4	27 (15.3)	75 (42.4)	50 (28.2)	25 (14.1)	
35-44	32.2±9.2	22 (20.2)	45 (41.3)	24 (22.0)	18 (16.5)	
45-54	29.8±9.2	9 (20.5)	19 (43.2)	13 (29.5)	3 (6.8)	
≥ 55	25.6±9.6	16 (53.3)	9 (30.0)	3 (10.0)	2 (6.7)	
Educational attainment						0.001
High school or below	30.1±8.4	55 (23.7)	97 (42.7)	62 (26.7)	16 (6.9)	
Undergraduate or above	33.0±8.8	39 (15.5)	103 (41.0)	64 (85.5)	45 (17.9)	
Marital status						0.503
Married	31.1±9.1	63 (21.6)	120 (41.2)	73 (25.1)	35 (12.0)	
Unmarried	32.4±8.0	31 (16.1)	82 (42.7)	53 (27.69)	26 (13.5)	
Place of residence (the longest time)						0.077
Village/Town	28.1±8.3	12 (31.6)	17 (44.7)	9 (23.7)	0 (0%)	
City	31.7±8.7	73 (19.2)	161 (42.3)	95 (24.9)	52 (13.6)	
Metropolitan city	33.0±8.3	9 (14.1)	24 (37.5)	22 (34.4)	9 (14.1)	
Occupation						0.076
Civil servant	32.8±8.8	36 (16.4)	86 (39.1)	60 (27.3)	38 (17.3)	
Student	31.5±7.2	14 (17.59	38 (47.5)	21 (26.3)	7 (8.8)	
Other	30.2±9.0	44 (24.0)	78 (42.6)	45 (24.6)	16 (8.7)	
Household income						0.131
Income < Expenditures	30.0±9.0	36 (22.6)	71 (44.7)	38 (23.9)	14 (8.8)	
Income=Expenditures	31.8±8.5	46 (19.2)	102 (42.7)	59 (24.7)	32 (13.4)	
Income > Expenditures	34.1±8.2	12 (14.1)	29 (34.1)	29 (34.1)	15 (17.6)	
BMI						0.061
< 25.0	32.3±8.5	49 (16.2)	127 (41.9)	83 (27.4)	44 (14.5)	
≥ 25	30.4±8.9	45 (25.0)	75 (41.7)	43 (23.9)	17 (9.4)	
Chronic disease						0.005
Yes	28.5±9.9	27 (32.1)	35 (41.7)	14 (16.7)	8 (9.5)	
No	32.2±8.3	67 (16.8)	167 (41.9)	112 (28.1)	53 (13.3)	
Number of households						0.478
1-3	32.1±8.9	30 (20.1)	60 (40.3)	36 (24.2)	23 (15.4)	
4-5	32.4±8.3	30 (16.1)	82 (44.1)	49 (26.3)	25 (13.4)	
≥ 6	30.2±8.9	34 (23.0)	60 (40.5)	41 (27.7)	13 (8.8)	
Health insurance						0.511
No/Green Card	30.3±10.7	15 (25.4)	20 (33.9)	16 (27.1)	8 (13.6)	
Yes	31.8±8.4	79 (18.6)	182 (42.7)	110 (25.9)	53 (12.5)	
* χ 2 test used						

Table 4. Participants' scores on the HLS-EU-Q and its subscales by their sociodemographic characteristics

Sociodemographic characteristics	HL Score M±SD	Inadequate n (%)	Problematic n (%)	Sufficient n (%)	Excellent n (%)	p*
Perceived social status						<0.001
1-5	27.8±9.9	46 (34.8)	56 (42.4)	18 (13.6)	12 (9.1)	
6-7	31.9±7.2	27 (16.8	70 (43.5)	50 (31.1)	14 (8.7)	
8-10	34.0±8.0	21 (11.1)	76 (40.0)	58 (30.5)	35 (18.4)	
Receiving assistance while reading and writing						0.927
Sometimes/ always	31.7±8.6	27 (19.9)	55 (40.4)	38 (27.9)	16 (11.8)	
Seldom/ never	31.6±8.7	67 (19.3)	147 (42.4)	88 (25.4)	45 (13.0)	
Reading enjoyment						<0.001
1-4	28.2±8.9	37 (30.6)	55 (45.5)	22 (18.2)	7 (5.8)	
5-7	32.1±7.3	25 (15.3)	71 (43.6)	51 (31.3)	16 (9.8)	
8-10	33.2±9.1	32 (16.1)	76 (38.2)	53 (26.1)	38 (19.1)	
Frequency of reading						0.001
Never	27.3±9.4	25 (35.7)	28 (40.0)	14 (20.0)	3 (4.3)	
Sometimes/ Frequently	32.3±8.4	69 (16.7)	174 (42.1)	112 (27.2)	58 (14.0)	
Perceived health status						<0.001
Excellent	34.1±7.7	15 (13.0)	37 (32.2)	43 (37.4)	20 (17.4)	
Good/Fair	31.9±7.8	37 (16.2)	104 (45.4)	63 (27.5)	25 (10.9)	
Bad	29.1±10.0	42 (30.2)	61 (43.9)	20 (14.4)	16 (11.5)	
The most trusted source of health information						0.479
Healthcare workers	31.8±8.7	59 (17.6)	142 (42.4)	90 (26.9)	44 (13.1)	
Other	31.2±8.7	35 (23.6)	60 (40.5)	36 (24.3)	17 (11.5)	
Preliminary healthcare provider						0.943
Family health centers	31.7±8.8	33 (20.1)	67 (40.9)	43 (26.2)	21 (12.8)	
State hospitals	31.8±8.9	32 (17.3)	77 (41.6)	52 (28.1)	24 (13.0)	
Private hospitals	31.1±8.4	29 (21.6)	58 (43.3)	31 (23.1)	16 (11.9)	
Frequency of application to health institutions						0.124
≤1 per month	32.1±8.4	72 (17.8)	169 (41.7)	110 (27.2)	50 (13.3)	
>1 per month	28.9±9.7	22 (28.2)	33 (42.3)	16 (20.5)	7 (9.0)	
* χ 2 test used						

Bulut Çelik et al. Exploring health literacy and associated factors

J Med Palliat Care. 2023;4(5):478-484

Table 5. Multivariate logistic regression analysis for predictors of sufficient/excellent health literacy					
HLS-EU-Q Scores	**B (SE)**	**Wald**	**AOR**	**95% CI**	**p***
Gender					
Male			1		
Female	0.035 (0.232)	0.023	1.036	0.657-1.634	0.879
Age (years)					
18-24			1		
25-34	-0.260 (0.341)	0.582	0.771	0.395-1.504	0.446
35-44	-0.286 (0.385)	0.554	0.751	0.353-1.597	0.457
45-54	-0.112 (0.483)	0.054	0.894	0.347-2.303	0.816
≥55	-0.456 (0.642)	0.505	0.634	0.180-2.230	0.477
Educational attainment					
High school and below			1		
Undergraduate and above	-0.039 (0.272)	0.021	0.961	0.564-1.640	0.085
Occupation					
Civil servant			1		
Student	-0.585 (0.425)	1.894	0.557	0.242-1.282	0.169
Other	-0.126 (0.259)	0.237	0.881	0.530-1.466	0.627
Place of residence (the longest time)					
Village/Town			1		
City	0.534 (0.447)	1.429	1.706	0.711-4.094	0.232
Metropolitan city	0.817 (0.512)	2.543	2.263	0.829-6.177	0.111
Household income					
Income < Expenditures			1		
Income=Expenditures	0.138 (0.231)	0.355	1.148	0.730-1.805	0.551
Income > Expenditures	0.655 (0.308)	4.515	1.925	1.052-3.521	0.034
Perceived health status					
Bad			1		
Good/Fair	0.217 (0.269)	0.650	1.242	0.733-2.106	0.420
Excellent	0.942 (0.315)	8.958	2.564	1.384-4,751	0.003
BMI					
< 25.0			1		
≥ 25.0	-0.215 (0.246)	0.762	0.807	0.498-1.307	0.383
Chronic disease					
Yes			1		
No	0.195 (0.333)	0.342	1.215	0.633-2.332	0.559
Frequency of application to health institutions					
≤1 per month			1		
>1 per month	0.016 (0.301)	0.003	1.016	0.563-1.835	0.957
Perceived social status					
1-5			1		
6-7	0.395 (0.286)	1.905	1.485	0.847-2.602	0.168
8-10	0.701 (0.285)	6.057	2.016	1.154-3.525	0.014
Frequency of reading					
Never			1		
Sometimes/Frequently	-0.094 (0.369)	0.065	0.910	0.442-1.875	0.798
Reading enjoyment					
1-4			1		
5-7	0.705 (0.316)	4.983	2.024	1.090-3.758	0.026
8-10	0.762 (0.314)	5.893	2.143	1.158-3.966	0.015
Model ($\chi^2(22)$, p)	59.281, p < 0.001				
Hosmer-Lemeshow Test, p	0.251				
Nagelkerke, R^2	15.7%				
Classified cases (%)	67.3%				
*Binary logistic regression analysis; AOR: Adjusted Odds Ratio; CI: Confidence Interval; SE: Standard Error					

J Med Palliat Care. 2023;4(5):478-484

Bulut Çelik et al. Exploring health literacy and associated factors

DISCUSSION

The 2014 Türkiye Health Literacy Survey revealed that only one-third of the population had sufficient or excellent health literacy. In the same survey, health literacy was found to be significantly lower in women and those older than 65 years, and there was an inverse correlation between health literacy and age and education level.[16] The findings of a study in primary health centers in Bursa suggested that the rate of those with sufficient health literacy varied between 28.1% and 58.7% by the instrument used, that the most prominent sociodemographic characteristics associated with health literacy became education, that vocabulary and reading skills were more effective factors in health literacy than numerical skills, and that those scoring the lowest in health literacy were women, primary school graduates, low-gainers, and older adults.[27] A previous study in Edirne concluded positive correlations between health literacy and educational attainment, the number of books read per year, the number of newspapers read per week, and monthly income.[8] In another study, the researchers found that low-income patients were able to understand drug leaflets and leaflets about their diseases less.[28] A Portugal-based study in primary health centers suggested that high health literacy is associated with better education and income.[29] Similarly, health literacy was previously found to be higher in participants with a higher income level.[30] In our study, we discovered that the participants with a monthly income surpassing their expenditures had about twice the level of health literacy compared to those with a low monthly income, which may be since those with a higher income level are likely to enjoy more opportunities to access health-related information and services. In this regard, relevant state bodies may consider deploying efforts to promote health literacy in society and ensure equal health-related conditions for every citizen.

It is known that the majority of deaths of all ages worldwide are due to chronic diseases. Failure to comply with healthy living principles and practices facilitates the development of various chronic diseases. Substantial evidence underlined that insufficient health literacy is associated with poor health outcomes, adverse health behavior, and increased costs in chronic diseases.[31] Besides, health literacy is closely related to protection from modifiable risk factors and non-communicable conditions.[17] In our study, we discovered that the younger participants, those with higher educational attainment, and those without chronic disease had significantly greater health literacy. Thus, higher health literacy is thought to contribute to the general health status of society and help cut the expenditures for chronic diseases.

CONCLUSION

In a nutshell, we deem it necessary to reveal health literacy levels and associated factors among individuals for the sake of promoting a contemporary understanding of health to protect and improve health across the world. Moreover, relevant state bodies are recommended to introduce policies to improve health literacy levels in Turkish society to maintain public health and improve inequalities in accessing healthcare services.

ETHICAL DECLARATIONS

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