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Health Literacy and Its Association with Emergency Department Use and Primary Care Preferences Among Adults: A Cross-Sectional Study in Turkey

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Abstract

Background

Emergency department overcrowding is a persistent global public health issue, often driven by non-urgent visits. Health literacy is considered a key determinant of appropriate healthcare utilization.

Objective

This study aimed to examine the relationship between health literacy and primary care utilization behaviors among adults presenting to the emergency departments green zone.

Methods

A descriptive cross-sectional study was conducted with 420 adult patients admitted to the emergency departments green zone of a training and research hospital between April and August 2025. Data were collected using a demographic questionnaire and the Health Literacy Scale (HLS-14). Non-parametric tests (Mann–Whitney U and Kruskal–Wallis H) were applied.

Results

Participants who used national appointment systems (CPAS/182 hotline) had significantly higher health literacy scores ($p < .001$, $\eta^2 = .237–.304$). No significant association was found between health literacy and intention to visit family physicians ($p > .05$) or frequency of healthcare utilization. Health information source was significantly associated with health literacy ($p < .001$), with higher scores among participants using digital and professional sources.

Conclusion

Health literacy is strongly associated with digital health system utilization but not with self-reported healthcare-seeking intentions. Strengthening digital health literacy may improve appropriate healthcare use.

INTRODUCTION

Emergency department overcrowding remains a global healthcare challenge, particularly due to non-urgent visits. In Türkiye, emergency department utilization rates are among the highest in OECD countries, leading to increased workload and reduced care quality [1].

Primary care systems, particularly family medicine, are designed to manage most health problems at the first level of care. However, patients frequently bypass primary care and directly access secondary or tertiary services, including emergency departments [2].

Health literacy is defined as the ability to access, understand, and use health information to make appropriate health decisions [3]. Low health literacy is associated with inappropriate healthcare utilization and increased emergency department visits [4].

Despite growing literature, limited evidence exists on the role of health literacy in the preference for emergency departments over primary care services in Türkiye. This study aimed to investigate the relationship between health literacy and healthcare-seeking behaviors among emergency departments green zone patients.

METHODS

Study design

Cross-sectional descriptive study.

Setting and participants

The study was conducted in a tertiary hospital emergency department green zone in Turkey. A total of 420 adult patients were included using a convenience sampling approach between April–August 2025.

Data Collection Tools

Data were collected using a structured questionnaire and the Health Literacy Scale (HLS-14). The scale includes functional, interactive, and critical health literacy dimensions with a total score range of 14–70 [5,6].

Statistical Analysis

Data were analyzed using SPSS 27. As data were non-normally distributed ($p < .05$), Mann–Whitney U and Kruskal–Wallis H tests were applied. Effect sizes were calculated using η^2 formulas. Statistical significance was set at $p < .05$.

RESULTS

Table 1
Socio-Demographic Characteristics of Participants

Characteristics	Number (f)	Percentage (%)
Gender (n = 420)		
Female	245	58.3
Male	175	41.7
Age Groups (n = 420)		
18–34 Age	236	56.2
35–64 Age	151	36.0
65 and older	33	7.8
Marital Status (n = 420)		
Married	270	64.3
Single	150	35.7
Educational Status (n = 420)		
Illiterate	49	11.7
Elementary School Graduate	79	18.8
Middle School Graduate	54	12.9
High School Graduate	157	37.4
Higher Education/University Graduate	81	19.3
Employment Status (n = 420)		
Civil servant	69	16.4
Unemployed	25	6.0
Tradesman	43	10.2
Housewife	138	32.9
Retired	15	3.6
Student	59	14.0
Worker	64	15.2
Farmer	7	1.7
Social Security (n = 420)		
Yes	294	70.0
No	126	30.0
Chronic Disease (n = 420)		

Characteristics	Number (f)	Percentage (%)
Gender (n = 420)		
Yes	115	27.4
No	305	72.6
Regular Check-ups (n = 420)		
Yes	103	24.5
No	317	75.5
Regular Medication Use (n = 420)		
Yes	104	24.8
No	316	75.2

As shown in Table 1, the vast majority of participants are women, aged 18–34, married, high school graduates, and housewives. Three-quarters of participants have social security, no chronic illness, do not undergo regular medical check-ups, and do not take medication regularly.

Table 2
Health literacy scores according to CPAS and 182 Hotline Usage

Health Literacy (HL) Sub-Dimension	Group	n	M	Md	SD	Mean Rank	U	z	*p*	η^2
Using CPAS and the 182 Line										
Functional HL	Yes	292	15.34	17.00	5.36	250.58	6985.00	-10.325	**< .001**	**.254**
	No	128	8.42	5.19	5.19	119.07				
Interactive HL	Yes	292	16.45	17.00	4.94	249.88	7190.00	-10.070	**< .001**	**.241**
	No	128	10.14	9.00	5.02	120.67				
Critical HL	Yes	292	13.32	15.00	5.23	249.34	7345.50	-9.986	**< .001**	**.237**
	No	128	7.28	4.00	4.36	121.89				
General HL	Yes	292	45.12	47.50	13.26	254.79	5756.00	-11.305	**< .001**	**.304**
	No	128	25.85	23.50	12.39	109.47				

*The Mann–Whitney U test was used. Eta-squared (η^2) values were calculated using the formula $\eta^2 = z^2/N$ (N = 420). For η^2, values of 0.01 were classified as a small effect, 0.06 as a moderate effect, and 0.14 and above as a large effect.

As shown in Table 2, when participants' health literacy levels were examined based on their use of the CPAS and the 182 hotline, it was found that individuals who used the CPAS and the 182 hotline had significantly higher

scores in functional, interactive, critical, and overall health literacy compared to those who did not use these services (p < .001).

A significant difference was found between the groups in terms of functional health literacy scores, U = 6985.00, z = − 10.325, *p*<.001, η^2=.254. This result indicates a large effect size. A significant difference in favor of users was also found in interactive health literacy scores, U = 7190.00, z = − 10.070, *p*<.001, η^2 = .241. The difference observed for critical health literacy was also found to be significant and of a large effect size, U = 7345.50, z = − 9.986, *p*<.001, η^2=.237.

When total health literacy scores were evaluated, it was found that the scores of individuals using the CPAS and the 182 hotline were significantly higher: U = 5756.00, z = − 11.305, *p*<.001, η^2=.304. This finding indicates that the use of the CPAS and the 182 hotline is strongly associated with health literacy.

Table 3
Health literacy according to intention to visit family physician

Health Literacy (HL) Sub-Dimension	**Group**	**n**	**M**	**Md**	**SD**	**Mean Rank**	**U**	**z**	***p***	***η*²**
Go to the Family Doctor										
Functional HL	Yes	47	12.91	14.00	5.88	199.14	8231.50	-0.688	.492	.001
	No	373	13.28	15.00	6.23	211.93				
Interactive HL	Yes	47	14.72	16.00	6.72	217.32	8445.00	-0.410	.682	.000
	No	373	14.50	15.00	5.62	209.64				
Critical HL	Yes	47	11.91	14.00	6.27	219.07	8362.50	-0.518	.604	.001
	No	373	11.42	11.00	5.63	209.07				
General HL	Yes	47	39.55	45.00	17.42	215.72	8520.00	-0.313	.754	.000
	No	373	39.21	40.00	15.53	209.84				

* The Mann–Whitney U test was used in the analyses. SS = standard deviation. Eta-squared (η²) values were calculated using the formula η² = z² / N (N = 420). For η², values of .01 were considered small, .06 moderate, and .14 large effect sizes.

When examining the health literacy scores of participants who visited the emergency department according to their intention to visit a family physician, as shown in Table 3, no statistically significant difference was found between the groups in terms of functional, interactive, critical, and total health literacy scores (p > .05).

The effect sizes obtained were quite low. These findings indicate that the intention to visit a family physician has no significant effect on health literacy levels.

Table 4
Health literacy according to health information source

Characteristics	n	M	SD	*H*	*p*	*η²*	*Post-Hoc (Dunnet'sC)*
Health Information Resource							
Family Doctor	44	35.72	17.63	48.951	**< .001**	**.117**	1 < 6
Hospital Doctors	167	37.67	14.86				2 > 4<6
Healthcare Staff	14	49.14	12.78				3 > 4
Family, Close Relatives	56	29.41	16.06				4 < 2,3,5,6
Spouse, Friends, and Acquaintances	9	50.00	13.89				5 > 4
Internet	130	44.91	13.31				6 < 1,2,4

* The Kruskal–Wallis H test was used in the analyses. SS = standard deviation. Eta-squared (η²) values were calculated using the formula η² = (H − k + 1) / (N − k) (N = 420). Effect sizes were classified as small (η² ≤ 0.01), moderate (0.01 < η² ≤ 0.06), and large (η² ≥ 0.14).

No statistically significant difference was found in health literacy scores based on participants' perceived health status, frequency of visits to their family physician in the past six months, frequency of visits to outpatient clinics in the past six months, and reasons for not choosing a family physician (p > .05).

In contrast, Table 4 shows that health literacy scores differed significantly according to the health information source variable: H(5) = 48.951, p<.001, η^2 = .117. The effect size is moderate. According to the results of the post hoc analysis, the health literacy scores of individuals who obtain health information from the internet are higher than those of individuals who obtain information from their family physician and family/close circle. Additionally, it was observed that the scores of individuals who obtain information from healthcare professionals and friends/acquaintances are also higher than those of individuals who obtain information from their family/close circle.

Table 5
Overall health literacy scale scores

Subdimensions	***Mean (X)***	**Standard Deviation (SD)**
Functional Health Literacy	13,24	6,19
Interactive Health Literacy	14,53	5,75
Critical Health Literacy	11,48	5,70
Total Health Literacy	39,25	15,73

As shown in Table 5, looking at the subscale and total mean scores of the health literacy scale for adults participating in the study, it is possible to say that they have a "limited" level of health literacy.

DISCUSSION

This study examined the relationship between the health literacy levels of adults presenting to the emergency department's triage area and their use of the CPAS and 182 hotline, as well as their attitudes toward family medicine services and their sources of health information. The findings indicate that health literacy is particularly associated with access to the health care system and behaviors related to the use of digital health services.

According to the study findings, the health literacy levels of individuals who use the CPAS and the 182 hotline are significantly higher than those of individuals who do not use them ($p < .001$). The large effect sizes indicate that this relationship is strong. This result suggests that individuals with high health literacy are better able to manage their access to the healthcare system and benefit more from digital health services. Similarly, the literature emphasizes that individuals with high health literacy use healthcare access tools more effectively [7,8]. In a study conducted by Dost and Özsoy-Durmaz [9], it was found that nearly all participants knew which department to schedule an appointment with but were unable to do so without assistance. Furthermore, consistent with the findings of this study, participants who knew how to schedule an appointment were found to have higher levels of health literacy.

In contrast, no significant association was found between individuals' intention to visit a family physician and their health literacy when seeking care at the emergency department ($p > .05$). This suggests that healthcare choice cannot be explained solely by an individual's level of knowledge. It has been reported that emergency department use is influenced by multidimensional factors such as rapid access to care, perceived urgency, experience with the healthcare system, and habits [1,10].

Similarly, no significant association was found between perceived health status, frequency of health care use in the past six months, reasons for not choosing a family physician, and health literacy ($p > .05$). This finding indicates that health literacy alone is not sufficient to explain the frequency of health care use. Health care utilization is influenced by many factors, such as an individual's disease burden, socioeconomic status, and access to the health care system [4].

The study found a significant association between sources of health information and health literacy ($p < .001$). It was determined that individuals who obtain health information from the internet and health professionals have higher levels of health literacy. This finding suggests that digital information sources can support health literacy. However, since the accuracy of health information from internet sources can vary, it is emphasized that individuals' information evaluation skills become increasingly important [3,11]. In the studies conducted by Dost and Özsoy-Durmaz [9] and Çalık and Kolaç's [12] studies, similar results were found, indicating that participants used the internet as a health information source at a high rate and consulted healthcare professionals. Furthermore, the health literacy level was found to be higher among participants who used the internet and healthcare professionals as health information sources compared to those who used all other sources as health information sources. In other studies conducted in our country, similar results to our study have shown that the most frequently used source for accessing health information is healthcare professionals [13,14].

Limitations of the Study

The study sample consists only of adults who visited the green zone of the emergency department of an education and research hospital in one province between 8 a.m. and 5 p.m. Therefore, it may not reflect the characteristics of adults who visit the green zone of other emergency departments. Another limitation is that the data was collected at a single time and time slot.

CONCLUSION

This study examined the relationships between the health literacy levels of adults presenting to the emergency department's green zone and their use of health services and preferences regarding the health system. According to the results, individuals who use the CPAS and the 182 hotline have significantly higher levels of health literacy, and this relationship has a strong effect size.

In contrast, no significant relationship was found between health literacy and the intention to visit a family physician, perceived health status, or frequency of healthcare service use. This finding indicates that healthcare utilization behaviors cannot be explained solely by health literacy and possess a multidimensional structure [4].

In terms of sources of health information, a significant difference was observed; it was found that individuals who use the internet and health professionals as sources have higher levels of health literacy. This finding highlights the importance of digital health literacy [8].

In conclusion, health literacy is a key determinant, particularly regarding the use of tools for accessing the healthcare system and obtaining reliable health information. Therefore, it is recommended to develop educational programs aimed at increasing health literacy in the community, support digital health literacy, and guide individuals toward reliable information sources.

Abbreviations

CPAS	Central Physician Appointment System

Declarations

Ethics approval: This study was conducted in accordance with the principles of the Declaration of Helsinki, approved by Mardin Artuklu University Non-Interventional Clinical Research Ethics Committee (2025/3-24).

Consent: Written informed consent obtained.

Competing interests: None.

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Availability of data: Available upon reasonable request.

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