

Factors Affecting Health Literacy and Relationship Between Health Literacy and Child Emergency Utilization: Relationship Between Health Literacy and Emergency Service

Sağlık Okuryazarlığını Etkileyen Faktörler ve Sağlık Okuryazarlığı ile Çocukların Acil Durumda Kullanımı Arasındaki İlişki

Sevgi Akova

University of Health Sciences Türkiye, Ümraniye Training and Research Hospital, Clinic of Pediatric Emergency, İstanbul, Türkiye

ABSTRACT

Background: This study examines the health literacy differences between parents of patients who visited the yellow and green zones and its impact on their emergency use.

Materials and Methods: The study analyzes the participants' demographic characteristics such as age, gender, marital status, occupation, income, and education. The health literacy levels of the participants were determined using the Turkish health literacy scale-32 (TSOY-32).

Results: TSOY-32 scores of patients with a yellow zone triage scale who visited the pediatric emergency service were found to be adequate and similar. Participants with secondary and master's degrees exhibited problematic health literacy, while those with a doctoral degree showed insufficient health literacy. Participants with primary, high school, vocational school, and university degrees displayed sufficient health literacy. It was observed that parents with higher monthly incomes had higher health literacy. Regarding the parents of patients who visited the pediatric emergency green zone, significant differences were found. TSOY-32 scores of male parents were problematic, while those of female parents were adequate. According to TSOY-32 score evaluation, participants with secondary school, high school, and masters degrees exhibited sufficient health literacy. Participants with primary and vocational school degrees showed problematic health literacy, and those with doctoral degrees exhibited insufficient health literacy. Despite varying educational backgrounds, it was determined that the health literacy of parents who visited the pediatric emergency green area was similar. When comparing the yellow and green zones, it was found that parents who visited the green zone had lower health literacy levels.

Conclusion: We have concluded that having sufficient health literacy is directly related to the results of having sufficient basic health knowledge, being aware of their rights and responsibilities, and approaching all problems that may arise in the system by making the right decisions.

Keywords: Health literacy, yellow zone, green zone, parent

ÖZ

Amaç: Sarı alan ve yeşil alana başvuran hasta ebeveynlerinin arasındaki sağlık okuryazarlık farkları ile acil başvurularına olan etkisi incelenmiştir.

Gereç ve Yöntemler: Katılımcıların yaş, cinsiyet, medeni durum, meslek, gelir durumu ve eğitim durumu gibi demografik özellikleri analiz edilmiştir. Katılımcıların sağlık okuryazarlık düzeyleri Türkçe sağlık okuryazarlığı ölçeği-32 (TSOY-32) kullanılarak tespit edilmiştir.

Bulgular: Çocuk acil servisine başvuran triaj skalası sarı olan hastaların TSOY-32 puanı yeterli ve benzer bulunmuştur. Ortaokul ve yüksek lisans mezunu olanlar sorunlu, doktora mezunu olanlar yetersiz sağlık okuryazarlığı sergilemiştir. İlkokul, lise, meslek yüksekokulu ve üniversite mezunu olanlar ise yeterli sağlık okuryazarlığına sahip olmuşlardır. Aylık geliri yüksek olan ebeveynlerin sağlık okuryazarlığı daha yüksektir. Çocuk acil yeşil alana başvuran hasta ebeveynleri arasında anlamlı farklar bulunmuştur. TSOY-32 puanlarına göre erkek ebeveynlerin sağlık okuryazarlığı sorunludur, kadın ebeveynlerin ise yeterlidir. Ortaokul, lise ve yüksek lisans mezunu olanlar yeterli sağlık okuryazarlığına sahipken, ilkököl ve meslek yüksekokulu mezunu olanlar sorunlu, doktora mezunu



Address for Correspondence: Sevgi Akova, University of Health Sciences Türkiye, Ümraniye Training and Research Hospital, Clinic of Pediatric Emergency, İstanbul, Türkiye
Phone: +90 533 313 74 74 E-mail: akovasevgi2000@hotmail.com **ORCID ID:** orcid.org/0000-0003-3332-6771

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ÖZ

olanlar ise yetersiz sağlık okuryazarlığı sergilemiştir. Eğitim seviyeleri farklı olsa da çocuk acil yeşil alana başvuran ebeveynlerin sağlık okuryazarlıklarının benzer olduğu tespit edilmiştir. Sarı ve yeşil alanlar karşılaştırıldığında, yeşil alana başvuran ebeveynlerin sağlık okuryazarlık düzeylerinin daha düşük olduğu görülmüştür.

Sonuç: Yeterli düzeyde sağlık okuryazarlığına sahip olunması, yeterli temel sağlık bilgisine sahip olabilme, hak ve sorumluluklarının bilincinde olma, sistem içerisinde oluşabilecek tüm sorunlara doğru kararlar vererek yaklaşabilme sonuçlarıyla doğrudan ilişkili olduğu kanaatine vardık.

Anahtar Kelimeler: Sağlık okuryazarlığı, sarı alan, yeşil alan, ebeveyn

Introduction

The paragraph you provided contains technical information and some specific details. I have made some edits to improve clarity and readability:

The concept of health literacy (HL) was first introduced by Simonds (1,2). The World Health Organization (WHO) defines HL as “the cognitive and social skills that individuals need to access, understand, and use health-related information in order to maintain and improve their own health” (3). According to the American Medical Association, HL refers to “individuals’ ability to read health-related messages, understand instructions on medication labels, and comprehend and follow instructions provided by healthcare professionals” (4).

Sørensen et al. (5) analyzed various definitions of HL and concluded that it encompasses the knowledge, motivation, and skills required for individuals to access, understand, evaluate, and utilize health information to improve their health, prevent diseases, and enhance their quality of life (6).

Several scales are commonly used to determine HL levels, such as the rapid estimate of adult literacy in medicine and the test of functional HL in adults (7). Other available tests include the mini-mental state examination (8), the wide range achievement test (9,10), the medical achievement reading test (5), the newest vital sign (11), a two-question test (8), the health activity literacy scale (9), and the Turkish health literacy scale-32 (TSOY-32) (12).

TSOY-32 is a newly developed scale consisting of 32 items. It is based on the research conducted for the European health literacy survey-questionnaire (HLS-EU). Unlike the original scale, the TSOY-32 is structured as a 2x4 matrix with two basic dimensions (treatment and care, and disease prevention/health promotion) and four processes (access to health-related information, understanding of health-related information, assessment of health-related information, and use/application of health-related information), resulting in eight components (9). In the evaluation of the scale, the indices were standardized between 0 and 50, following the approach used in HLS-EU study.

The following formula was employed for this purpose:

$$\text{Index} = (\text{mean} - 1) \times (50/3)$$

Similar to the HLS-EU study, the obtained index was classified into four categories. Each item was graded on a scale of 1 to 4, with 1 representing “very easy”, 2 for “easy”, 3 for “difficult”, and 4 for “very difficult”. The code 5 was used to indicate “I have no idea”. Before calculating the scores, the codes were recoded as 1-4, 4-1, and the calculations were performed using a formula.

HL plays a crucial role in eliminating health inequalities, increasing lifespan, and improving the quality of life for individuals. For patients, it ensures that health information is understandable and that they are involved in the decision-making process, while for healthcare professionals, it leads to professional satisfaction, effective communication, and the acquisition of clinical skills (13). Lack of HL can create barriers to access information and services, making it important for individuals to navigate complex healthcare systems and effectively manage their own health. Differences in individuals’ ability to read and understand health-related texts contribute to existing health inequalities within healthcare systems. It has been observed that individuals with low HL are more likely to experience poor health, struggle to understand their treatment, and have a higher risk of hospitalization. The annual healthcare costs for individuals with very low literacy levels may be four times higher than the general population (14,15).

When examining the relationship between HL levels and health management, it has been observed that individuals with insufficient or limited HL use preventive health services less frequently and have worse chronic disease management. Additionally, their morbidity and mortality rates are higher (16,17).

The term “triage” originates from the French word “trier”, meaning to choose or separate. The main objective of triage is to prioritize the diagnosis and treatment of emergencies, thereby preventing morbidity and mortality (18). Triage systems may vary between countries and within different hospitals within the same country based on specific needs (19). In Türkiye and in our hospital, a 3-stage color scale triage system is implemented following the Ministry of

Health's recommendation. Under this system, patients are categorized as "very urgent (red)," "urgent (yellow zone)," and "not urgent (green zone)" (20).

In Türkiye and other countries, the admission of non-emergency patients to emergency departments (ED) has become a common occurrence, resulting in increased overcrowding. This overcrowding can lead to delays in the diagnosis and treatment of emergency patients. Furthermore, unnecessary admissions to the emergency department impose an avoidable economic burden on the healthcare system, as it increases the demand for staff, materials, and laboratory resources.

In this study, our primary objective was to emphasize the importance of reducing unnecessary visits to the emergency room. We sought to achieve this by assessing the level of HL among individuals and examining the relationship between HL and the frequency of emergency department visits.

Material and Methods

The materials and methods of this study involved assessing the HL levels of parents whose children sought medical care in the green and yellow zones of pediatric emergency services. We conducted a review of previous HL studies conducted in our country and compared the HL levels between these two groups. The main objective was to explore the relationship between disparities in HL, rates of ED utilization, and the potential misuse of the ED by parents in the yellow and green zones.

The participants' HL levels were assessed using TSOY-32. The scale consists of 32 items, and their responses were used to calculate an overall HL index.

The item scores were transformed to a range of 0 to 50 to facilitate comparison across the index scores. The resulting scores were then categorized into four levels:

- Insufficient HL (>0-25 points),
- Limited HL (>25-33 points),
- Adequate HL (>33-42 points),
- Excellent HL (>42-50 points).

To simplify the analysis, insufficient and limited HL levels were combined into a single category referred to as limited HL (0-33 points).

Our study was conducted as a single-center, prospective, observational survey at the pediatric ED of University of Health Sciences Türkiye, Ümraniye Training and Research Hospital, from 2020 to 2022. The study protocol received ethical approval from the Ethics Committee on 14/01/2021, with the protocol number B.10.1.TKH.4.34.H.GP.0.01/16. The research followed the principles stated in the Helsinki Declaration and Good Clinical Practice, ensuring compliance with ethical guidelines regarding the research subject. Informed consent was obtained from each participant

before they completed the questionnaire, indicating their voluntary participation in the study.

Statistical Analysis

The data collected will be analyzed using the Statistical Package for the Social Sciences (SPSS) Statistics 25.0 software package developed by IBM Corp. The normality of the data distribution will be assessed using the Kolmogorov-Smirnov test. Descriptive statistical methods, including measures such as median, quartile, and frequency, will be utilized to evaluate the study data. Parametric tests such as One-Way ANOVA will be employed for parametric data, while non-parametric tests like the Mann-Whitney U test and Kruskal-Wallis H test will be used for non-parametric data. Correlation analysis will be conducted to assess numerical variables, and the chi-square test will be applied for the analysis of categorical variables. A significance level of $p < 0.05$ will be considered for all analyses.

Results

Parents of patients who applied to the pediatric emergency yellow zone had the following characteristics:

- The average age of the applicant parents ranged from 33.48 (median: 33) to a maximum of 74.
- Out of the total, 95 were men and 281 were women. The mean TSOY-32 score for parents in the yellow zone, categorized by gender, was as follows: Male - 33.3, female - 34.72.
- Based on these findings, it was determined that the TSOY-32 score of parents of patients in the pediatric emergency service with a yellow zone triage scale was sufficient and similar, with no statistically significant difference based on gender ($p > 0.05$).
- Out of the participants, 332 were married and 44 were single. The mean TSOY-32 scores for parents in the yellow zone were as follows: Married - 34.41, single - 33.36.
- In conclusion, there was no statistically significant difference in the HL of parents of patients with a yellow zone triage scale in the pediatric emergency service based on marital status ($p > 0.05$). It was also observed that the TSOY-32 scores were sufficient and similar for parents who were married or single.

Regarding the participants' educational levels, 80 had completed primary school, 95 had completed secondary school, 126 had completed high school, 10 had attended vocational school, 57 had attended university, 6 had a master's degree, and 2 had a doctorate. The average TSOY-32 scores for parents who applied to the pediatric emergency yellow zone were as follows: Primary school graduate 35.19, secondary school graduate 32.79, high school graduate 34.7, vocational school graduate 35.77, university/college



graduate 34.54, graduate degree 32.60, PhD graduates were found to be 14.1.

On the other hand, TSOY-32 scores were found to be problematic for those who graduated from secondary school and master's degree, insufficient for those with a doctorate degree, and sufficient for those who graduated from primary school, high school, vocational school and university. According to these results, there was no statistically significant difference ($p>0.05$) in the HL education level of the parents of the patients whose triage scale was yellow zone.

When the income status of the applicant parents was analyzed, 158 of them had less than their expenses, 169 of them had an income equal to their expenses, and 49 of them had more than their income. The average TSOY-32 scores of the parents who received yellow zone according to their income; income less than expenses 33.03, income equal to expenses 35.11, income more than expenses It was 35.53.

The TSOY-32 results of parents applying for childhood emergency yellow zone were assessed as adequate according to income. HL of parents of pediatric patients who applied to pediatric emergency services was statistically significant if the monthly deviation ($p<0.05$) in HL of parents of patients who applied to pediatric emergency services and had a yellow zone triage scale was statistically significant. It turns out that it was higher for parents with higher monthly income.

Considering the occupational status of our participants, 208 were housewives, 64 workers, 7 retired, 11 students, 24 civil servants, 6 tradesmen, 21 self-employed, 1 farmer, 34 had other occupations. The average of TSOY-32 scores of parents with yellow color according to occupational groups: Housewife 34.71, employee: 34.77, retired: 34.61, in students 27.73, officer 36.81, small business 36.31, in freelancers 32.41, in other occupational groups 31.99.

Farmer; it was detected as 32.1. According to the TSOY-32 scores of the occupational groups, it was evaluated as sufficient in all groups, and problematic in those who overlap freely with other occupations. Occupational differences ($p>0.05$) were not found to be statistically significant in the HL of the parents of the patients with yellow zone triage scale who applied to the pediatric emergency service (Tables 1, 2, 3).

Parents of the patients who applied to the pediatric emergency green zone;

- It was observed that the mean age was 33.8 (median: 34), the minimum age of parents was 19, and the highest age of parents was 65.
- When we analyzed in terms of gender, 153 were male and 318 were female. The TSOY-32 mean score of green

zone parents by gender; male; it was 33.39 for 32.47 women.

According to these results, TSOY-3 scores of green field parents were found to be problematic in males and adequate in females. The gender difference ($p>0.05$) was not statistically significant in the HL of the parents of the patients whose triage scale was green zone.

- In our analysis according to education level, 102 of them had primary school, 128 had secondary school, 154 had high school, 23 had vocational school, 55 had university/school education, 8 had master's degree and 1 had doctorate education. The TSOY-32 score averages of green field parents according to their educational status: Primary school graduate 32.64, secondary school graduate 33.6, high school graduate 33.15, vocational school graduate 32.7, university/college graduate 32.66, master's degree 35.45, PhD graduate was 17.2.

According to the TSOY-32 scale, primary school, secondary school, high school, vocational school and university graduates who applied to the green space were found to be problematic, while those with a doctorate degree were found to be inadequate. Accordingly, there was no statistically significant difference between the educational status and HL of the parents who applied to the green space ($p>0.05$).

As a result of the occupational analysis we conducted on the applicant parents, it was determined that 207 of them were housewives, 105 were workers, 12 were retired, 33 were students, 37 were civil servants, 15 were tradesmen, 33 were self-employed, 1 was a farmer and 28 were from other occupational groups. TSOY-32 averages of green field parents: Housewife 33.02, worker 32.59, retired 34.25, student; 34.47, civil servant 32.36, artisan 30.6. Self-employed; 32.08, other professions; 36.89, farmer; 32.3 were found to be sufficient and not statistically significant ($p>0.05$).

When we look at the income level, we see that 232 of the parents' income is less than their expenditures, 164 of the parents' income is equal to their expenditures, and 75 of the parents' income is more than their expenditures. Mean scores of the TSOY-32 according to the income level of the parents in the green zone: Income less than expenses; 33.39. Income equal to expenses; 33.02.

Income more than expenses; 32.32. TSOY-32 assessment of green field parents was found to be problematic for those whose income was more than expenditure and adequate for those whose income was more than expenditure, and was not found to be statistically significant ($p>0.05$).

In our study, 378 of the parents of patients with green field practice scale were married and 93 were single. The

mean scores of the TSOY-32 according to the marital status of green field patients: Married 33.18, single 32.71.

According to the TSOY-32 scores, married green field parents were found to be adequate and single parents were found to be problematic, which was not statistically significant (Tables 1, 2, 3) ($p>0.05$).

There was no statistically significant difference in terms of HL index score ($p=0.117$) in emergency service green zone and yellow zone applications (Table 2).

According to TSOY-32 scale applied to the patients included in the study, 16.4% of the participants were excellent, 38.8% sufficient, 30.5% problematic/limited, 14.3% insufficient health literate. This distribution was 14.1% excellent, 40.1% sufficient, 29.7% problematic/limited, 16.1% insufficient for the green zone. In the yellow zone, 19.4% were found to be excellent, 37.2% sufficient, 31.4% problematic/limited, and 12.30% inadequate. In terms of distribution of HL levels according to this scale,

there is no significant relationship between the emergency room green zone and emergency room yellow zone groups ($p=0.075$) (Table 3).

When the HL of the parents of the patients included in the study was compared in the yellow zone and the green zone, it was found that the HL of the parents was lower in the green zone applications ($p<0.05$, pearson coefficient: 0.125).

Discussion

When the literature was examined; two studies investigating the level of HL with the widest social cross-section were determined. These studies are studies carried out in the USA and European union countries. According to the European HL survey, 12.4% insufficient, 35.2% problematic, 36% sufficient and 16.5% excellent HL levels were determined. According to this study, there was a difference in HL levels between countries. Bulgaria (26.9%)

Table 1. Comparison of the distribution rates of demographic data between the emergency service green zone and yellow zone application groups

		Green zone			Yellow zone			Total	p	
		Median (25-75%)		Median (25-75%)	Median (25-75%)		Median (25-75%)			
Age		34 (28-40)			33 (27-39)			33 (28-39)	0.453	
Gender	n			n			n	%	0.022	
	Triage %			Triage %						
	Variable %			Variable %						
Marital status	Male	153	32.5	61.7	95	25.3	38.3	248	29.28	0.002
	Female	318	67.5	53.1	281	74.7	46.9	599	70.72	
	Married	378	80.3	53.2	332	88.3	46.8	710	83.8	
	Single	93	19.7	67.9	44	11.7	32.1	137	16.2	
Job										0.003
	Housewife	207	43.9	49.9	208	55.3	50.1	415	49	
	Employee	105	22.3	62.1	64	17	37.9	169	20	
	Retired	12	2.5	63.2	7	1.9	36.8	19	2.2	
	Student	33	7	75.0	11	2.9	25.0	44	5.2	
	Officer	37	7.9	60.7	24	6.4	39.3	61	7.2	
	Small business	15	3.2	71.4	6	1.6	28.6	21	2.5	
	Freelancer	33	7	61.1	21	5.6	38.9	54	6.4	
	Other	29	6.2	45.3	35	9.3	54.7	64	7.5	
Monthly income										0.011
	Income less than expenses	232	49.3	59.5	158	42	40.5	390	46	
	Income equivalent to expenses	164	34.8	49.2	169	44.9	50.8	333	39.3	

**Table 2. Comparison of literacy index score between groups**

	Green zone		Yellow zone		p
	Median	(25-75%)	Median	(25-75%)	
Health literacy index score	33.3	28.50-38.70	33.9	29.22-40.25	0.117

Table 3. Distribution of health literacy levels among the emergency service green zone and yellow zone application groups

Health literacy levels	Green zone		Yellow zone		Total		p
	n	%	n	%	n	%	
							0.075
Inadequate health literacy	76	16.10	45	12.00	121	14.30	
Troubled limited health literacy	140	29.70	118	31.40	258	30.50	
Adequate health literacy	189	40.10	140	37.20	329	38.80	
Excellent health literacy	66	14.10	73	19.40	139	16.40	

and Austria (18.2%) are the countries with the highest prevalence of insufficient HL. When the inadequate and problematic/limited categories were evaluated together, it was determined that the highest HL literacy rate was in Bulgaria (62.1%), followed by Austria (56.4%) and Spain (58.3%) (21). According to the US National Adult Literacy Study, it was stated that 12% had adequate HL, 53% moderate level, 22% basic level, and 14% below basic level (22).

In a study by Tanrıöver et al. (23) according to the Turkish HL survey conducted in Türkiye, 24.5% of Turkish citizens have poor HL, 40.1% have limited HL, 27.8% have adequate HL and 7.6% were found to have excellent HL [2-(101)]. According to the Turkish version of the European HL scale by Okyay and Abacıgil (12), 13.1% of the population had inadequate SHL scores and 39.6% had limited problems and 32.9=14.5% had excellent SHL scores.

In a study by Ergün (24) among health students, 25.9% had poor HL, 34.0% had limited problems, 27.0% had excellent HL, and 13.1% had very good HL. In a study by Çopurlar et al. (25) of 67 medical and nursing students, 63.6% rated their HL as adequate and 36.4% as limited. In our survey, 10.2% of students rated their HL as inadequate, 30.0% rated it as problematic, 33.0% rated it as adequate, and 26.8% rated it as excellent. I rated it as being. The results of our study are similar to those conducted in health-educated volunteers.

In our study, 248 (29.3%) of 847 people were male and 599 (70.7%) were female. When the ED clinic examined the green field and yellow field applications, it was seen that there was a statistically significant correlation between the gender of the patients who applied and the choice of triage ($p=0.022$). We found that the number of female parents with a yellow zone triage scale was significantly higher than that of male parents. Edirne et al. (26)

similarly, in their study, 43.2% of the patients were male and 56.8% were female. Unlike our study, Bertakis et al.'s (27) study named gender differences in the use of health services in the USA found that men mostly used emergency services and 3rd level hospital services, while women used primary health care services more. They associated this situation with men wanting to reach treatment more quickly (27).

The mean TSOY-32 of the parents who applied to the pediatric ED was found to be 33,3 for males and 34.72 for female parents. With these findings, TSOY-32 score was found to be sufficient and similar, and no statistically significant difference was found in terms of gender ($p>0.05$). When TSOY-32 index score was examined, Okyay and Abacıgil (12) observed that there was no relationship between genders, similar to our study (12). Haerian colleagues did not find any difference in HL index scores between genders in Iran (28). In the study conducted by Tanrıöver et al. (23) it was reported that the level of HL was lower in women, unlike our results. Unlike in the study of Sørensen et al. (21), a lower level of HL was found in males. In the study of von Wagner et al. (29) conducted in England, they also reported that being male is a risk factor for low HL, which is different from the results of our study. Among the reasons for the different results in these studies; We think that there may be educational inequality and differences in regional education levels.

As a result of our evaluation according to marital status, when examined in terms of marital status, it was seen that the emergency service yellow zone application was statistically significantly related to the emergency room green zone ($p=0.002$). It was observed that 710 (88.3%) married parents had a higher number of yellow zone applications than 248 (29.28%) male parents.

The average of TSOY-32 scores according to marital status; married; 34.41 singles: 33.36. We did not observe a statistically significant difference in marital status ($p>0.05$) in HL of the parents of the patients whose triage scale was yellow zone, and we also found that the TSOY-32 scores of those whose parents were married or single were adequate and similar. When we examined the relationship between the HL index score and marital status, Rikard et al. (30) found that the HL score of people who are married or living with married people is higher than that of single people. In a local study by Deniz and Oğuzöncül (31), no relationship was found between marriage and HL. Economic stability of married people, increase in quality of life, low depression levels, and increased social connections have been shown as the reason for this situation (32).

In the analysis of the education level of the parents of the patients included in the study, it was found that there was no statistically significant relationship between the applications for the green field to the emergency service and the applications for the yellow zone to the emergency service ($p=0.90$). In the study of Khan et al. (33) in Canada, unlike our study, they reported that the use of emergency services decreased as the level of education increased. In the study conducted by Andrews and Kass (34), again different from our study, they found that as the education level decreases, there is an increase in unnecessary emergency applications and they consider their illness more important and urgent.

There was no statistically significant difference ($p>0.05$) in the HL of the parents of the patients whose triage scale was yellow zone according to their education level. There was no statistically significant difference ($p>0.05$) in the HL education of the parents of the patients who applied to the pediatric emergency service and whose triage scale was green. According to the results; according to TSOY-32, according to the educational status of the green field parents, those who graduated from secondary school, high school, and masters degree adequately, those who graduated from primary school, vocational school and university were found to have problems, and those who graduated from doctoral schools were observed as insufficient. Contrary to what is believed, we obtained different data from the thought that there will be an increase in the TSOY-32 ratio with the increase in education level. Similar to our study, in the study of Nakayama et al. (35), who compared the HL index and education level, no relationship was found. Similar to our study, no significant difference was found between the education level and HL index of Özdemir et al. (36). The common opinion is that there is a very close relationship between the level of HL and the level of education (36). In the study of Lee et al. (37), unlike our study, they reported

that the level of HL increased with the increase in the education level of Asian immigrants in the United States. Also different from our study, Beauchamp et al. found that the level of HL was higher with the increase in education level.

In the study we conducted according to the occupational group, no statistically significant difference was found in the HL of the parents of the patients whose triage scale was yellow and green field ($p>0.05$). In the evaluation of the occupational groups of the parents whose triage scale was yellow zone, according to their TSOY-32 scores, they were considered adequate in all groups, and those who had free overlap with other occupations were considered problematic. Evaluation of the parents who applied to the child emergency green zone according to TSOY-32 was determined as sufficient for workers, civil servants, tradesmen, self-employed farmers, troubled housewives, retired, students and other occupational groups. We observed that studies on this subject are limited. In a study conducted by Haghdoost et al. (38) in Iran, the level of HL of fixed workers and students was observed to be significantly higher than those of non-permanent jobs.

TSOY-32 scores of the parents who applied to the pediatric emergency yellow zone according to their income were evaluated as adequate and the monthly income difference in HL ($p<0.05$) was found to be statistically significant. We found that it was too much. Of the parents who applied to the child emergency green zone, the TSOY-32 assessment was found to be problematic for those whose income was more than their expenses, and sufficient for those whose income was more than their expenses. The health literacy monthly income difference ($p>0.05$) was not statistically significant.

In our study, when we compared the HL of the parents of the patients in terms of yellow zone and green zone applications, it was found that the HL of the parents who applied to the green field service was lower. In our examination of the HL index score, the median index score of the parents who applied to the green zone was 33.3 and 33.9 for those who applied to the yellow zone. In our literature review; in a study that included 9 European countries of the European Union, 16.5% was found to be excellent, 36% sufficient, 35.2% problematic/limited, 12.4% inadequate (21). In the study of Nakayama et al. (35), 4.2% was found to be excellent, 10.4% sufficient, 35.5% problematic/limited, and 49.9% inadequate. With this study conducted in Japan, they found the opposite result in the idea that the level of HL is high in developed countries (35). In the study carried out by the Minister and his friend in Ağrı province of our country, the mean score of TSOY-32 scale was determined as 24,59, and when we analyzed the



two groups as adequate/excellent, insufficient/limited, they found the insufficient/limited ratio of the study to be 77.8, similar to our study. They found TSOY-32 score to be 33.8 (39). In TSOY-32 study of Okyay and Abacıgil (12), they found general HL to be in the problematic/limited class with a rate of 29.5. We found the general HL score of our study to be 33.6, and we determined that it was at a problematic-limited level.

Today, while the health system is getting more complex, the expectations from the people who benefit from this system are also increasing. Individuals are expected to be knowledgeable about the service required in the process of eliminating the health problems of themselves or their relatives. People can only find a solution in this complex structure if they have the ability to reach basic information about health and health service concepts, understand and fulfill the requirements. This proficiency state is defined by sufficient HL.

Inadequate HL leads to problems in the effective use of health services and an unhealthier life, while it results in low productivity, increased morbidity and mortality and cost increase at the social level. It is stated in studies conducted on this subject that among the reasons for applying to the emergency room green zone, patients want to receive service without making an appointment and waiting in line, easy access to the service, and the results of the examinations requested as a result of the examination in a short time on the same day. This suggests that patients do not perceive the concept of “urgency” correctly. Considering that the average of emergency service admissions in our country is around 30% of all patients, the low level of HL in our country is effective in the density of the emergency services.

The WHO sees HL as a key to improving health (WHO, 2012) ensuring public access to health and health services; appropriately recognizing and drawing conclusions from the messages to be conveyed in health promotion and development; communication channels for information transfer, especially screen education; addressing all parts of the world and applying effectively to health care providers at the right place, at the right time, at the right frequency, is the way to increase HL. The social determinants of health, the “education level of society” alone, is not enough. There are differences in levels of education and perceptions of topics related to education and behavioral reflection. All of them must be together for a healthy life (9).

Healthcare delivery is increasingly patient-centric and the role of patients in the system is increasing day by day. There is also a growing demand from patients who are more consciously aware of their health services. This situation draws attention to the concept of patient safety.

HL is a type of literacy that is gaining in importance. Literacy is a concept whose definition changes and develops over time. In the understanding of the modern world, where the most important fact is “change”, the classical definition of literacy has remained incomplete and inadequate, and the concept of literacy has been reinterpreted from different dimensions over time in parallel with the paradigm shifts.

The social, cultural and economic changes that humanity has been in throughout history have started to occur faster than ever before, especially since the 20th century. It has become a necessity for a person to receive education throughout his life in order to keep up with the society he lives in and these rapid changes. Thus, the concept of lifelong education emerged. Healthcare delivery is increasingly patient-centric and the role of patients in the system is increasing day by day. There is also a growing demand from patients who are more consciously aware of their health services. This situation draws attention to the concept of patient safety. Patients have various duties and responsibilities in ensuring patient safety. However, patients must be in good health to actively participate in the process and fulfill their assigned roles. At this point, the concept of health literacy comes to the fore. HL should be emphasized to empower patients and make a positive contribution to patient safety by enabling them to actively participate in the process. Factors affecting HL and the relationship between HL and patient safety. Thesis is an indispensable part of the literacy learning process. In this respect, many branches of science, from sociology to psychology, from education to history, have focused on the concept of literacy and have done a lot of research on this subject both in theory and in practice. The Turkish Language Association (2011) defines the concept of literacy as “the state of being literate”. Literate is defined as “an educated person who can read and write”. Literacy with its simplest and general definition; It can be expressed as the ability to read written texts and create a written text (Aldemir, 2003).

According to the data of the Ministry of Health of the Republic of Türkiye, the rate of applying to the hospital at least once during pregnancy was 98% in 2013. The average number of examinations of pregnant women who applied to the hospital was 4.3 in 2013. Again in 2013, 98% of all deliveries in Türkiye were carried out in hospitals. After birth, the average number of follow-ups per infant was 8.8 and the average number of follow-ups per child was 2.2 in 2013 (Ministry of Health, 2013). These figures alone show how important health services are in our lives. Almost everyone opens their eyes to this world in hospitals, in other words, within the healthcare system. Throughout their lives, they interact with the health care system many

times, both for themselves and for their relatives. However, the system in question is often extremely complex for both those who benefit from health services and their relatives. This complex system is becoming more and more patient-centered. This approach has imposed new responsibilities on patients. Individuals are exposed to an intense flood of information by health service providers, pharmacists, as well as the internet and the media, and those who demand health care are expected to be able to make basic decisions about health. However, the fact that this information from the environment is understandable, applicable and usable in making the right decision is closely related to the HL level of the individual. The basis of making the right decisions is to have sufficient basic health information, to be aware of their rights and responsibilities and to act in this direction. This becomes possible only if people have sufficient HL (CDC, 2009).

Study Limitations

The limitation of the study is that parents admitted to the pediatric ED with their children were involved in the study.

The study was conducted on all of parents who took their children to pediatric ED. Parents preferring polyclinics were not included in this study, so the parents were far away from performing triage. They all preferred urgent healthcare, mostly red zone, less preferred yellow and green zones.

Conclusion

It has been determined that having sufficient HL is directly related to the results of having sufficient basic health information, being aware of their rights and responsibilities, and approaching all problems that may arise in the system by making the right decisions.

Highlight Key Points

1. In this article, we aimed that by having sufficient health literacy, individuals will have the ability to have sufficient basic health knowledge, to be aware of their rights and responsibilities, and to approach all problems that may arise in the system by making the right decisions.

2. According to the data in the article, it has been revealed that emergency services are misused by individuals who do not have sufficient health literacy in Türkiye, as in many countries. When the patients were compared in terms of yellow zone and green zone use, we found that the health literacy of the parents who applied to the green zone was lower.

3. It was found that those who graduated from secondary school and master's degree had problems, those with doctorate degrees were insufficient, those who graduated from primary school, high school, vocational school and

university were found to be sufficient. With these results, it has been revealed that the concept of emergency patient and the information is insufficient or should be emphasized more in the education system.

Ethics

Ethics Committee Approval: Our study was conducted as a single-center, prospective, observational survey at the pediatric ED of University of Health Sciences Türkiye, Ümraniye Training and Research Hospital, from 2020 to 2022. The study protocol received ethical approval from the Ethics Committee on 14/01/2021, with the protocol number B.10.1.TKH.4.34.H.GP.O.01/16.

Informed Consent: Informed consent was obtained from each participant before they completed the questionnaire, indicating their voluntary participation in the study.

Peer-review: Internally and externally peer-reviewed.

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