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ORIGINAL RESEARCH
Pediatric Emergency

The effects of parents' health literacy on pediatric health services utilization

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ABSTRACT

Objective: We tried to analyze health literacy of parents who took their children to emergency departments and policlinics.

Material and Methods: We analyzed the association of parents' age, gender, marital status, educational, and income levels with their health literacy. Questionnaires investigating their health information, health service knowledge, deciding, evaluating and performing. Turkish Health Literacy Survey (THLS-32) index score levels were evaluated according to their answers. We demonstrated their using pediatric health services.

Results: Parents, aged between 20 and 29 years old and with higher educational levels, preferred emergency departments more commonly than others. There was no significant relation between household income levels and preferring emergency departments. Among THLS-32 index score results, there was no association of parents preferring emergency departments, policlinic, and their THLS-32 levels.

Conclusion: We investigated the influences of gender, education level, marital status, and income levels of parents' on health literacy. Health literacy should be improved for better health-care quality and health service utilization.

Keywords: Health literacy; parents; pediatric healthcare.

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Ebeveynlerin sağlık okuryazarlığının çocuk sağlığı hizmetlerinin kullanılmasına etkisi

ÖZET

Amaç: Bu çalışmada, çocuklarını acil servislere ve polikliniklere götüren ebeveynlerin sağlık okuryazarlıkları incelendi.

Gereç ve Yöntemler: Ebeveynlerin yaş, cinsiyet, medeni durum, eğitim ve gelir düzeylerinin sağlık okuryazarlığı ile ilişkisi incelendi. Sağlık bilgilerini, sağlık hizmeti bilgilerini araştıran, karar veren, değerlendiren ve uygulayan anketler ile TSOY-32 (Türk Sağlık Okuryazarlığı Araştırması) indeks puan düzeyleri verdikleri cevaplara göre değerlendirildi.

Bulgular: 20–29 yaş arası ve eğitim düzeyi daha yüksek olan ebeveynler, acil servisleri diğerlerine göre daha fazla tercih etmektedir. Hane halkı gelir düzeyi ile acil servisleri tercih etme arasında anlamlı bir ilişki yoktu. TSOY-32 indeks puanı sonuçları arasında; acil servisleri, polikliniği tercih eden anne ve babalar ile TSOY-32 düzeyleri arasında ilişki yoktu.

Tartışma: Anne ve babaların cinsiyet, eğitim düzeyi, medeni durum ve gelir düzeylerinin sağlık okuryazarlığı üzerindeki etkileri araştırıldı. Daha iyi sağlık hizmet kalitesi ve sağlık hizmetinden yararlanmak için sağlık okuryazarlığı geliştirilmelidir.

Anahtar Kelimeler: Ebeveynler; sağlık okuryazarlığı; çocuk sağlığı.

INTRODUCTION

The World Health Organization defined health literacy as "The cognitive and social skills which determine the motivation and ability of individuals to gain access to understand and use information in ways which promote and maintain good health" (1, 2). The literature pointed out that health literacy leads to the prevention of individuals' health, improving his knowledge, preventing from diseases, maintaining the individuals' self-care, and getting the accurate health services when needed (3–7).

Republic of Türkiye Ministry of Health determined and published Turkish Health Literacy Survey (THLS), based on European Health survey. THLS measured health literacy by demonstrating individual's using drugs, prevention of diseases, improving health by investigating, deciding, and performing (8, 9). THLS aims to measure health literacy levels by 32 questions. THLS-32 includes improving health by prevention of diseases and health services by treatments. Four parameters as accessing to health information, understanding, evaluating, and performing were demonstrated in prevention and treatment of diseases.

The literature reveals that individuals who have high health literacy benefit from health services more commonly. They adapted health-care rules and treatment strategies better than ones with low health literacy. Higher health literacy causes to improve in health service utilization and health outcomes (3–5).

MATERIAL AND METHODS

This study was conducted in Umraniye Training and Research Hospital between 2020 and 2021 years. The parents of 400 children who were taken to pediatric emergency departments and pediatric policlinics of this hospital participated in the study. The parents of children who were informed about the questionnaire investigating the health literacy were included in the study. They approved by written consents. The questionnaires were performed in computer assisted or paper assisted personal interview. Age, gender, marital status, educational level, monthly income of parents, and symptoms of children were investigated. THLS-32 was performed for the parents who took children to pediatrics emergency departments and policlinics. THLS-32 investigating the health literacy asked the parents how to understand and evaluate health symptoms accurately, to reach health services, to understands health information and to perform prevention and treatment alternatives, to use the drugs in appropriate dose, to understand the prescriptions, to find the address of policlinics and laboratories, to have routine health controls, to evaluate the environment conditions for well-being, to communicate for healthy information, and to use network, TV, media, awareness of unhealthy behaviors such as smoking, obesity, sedentary life style, the effects of fitness activities, and healthy nutrition. We tried to measure healthy literacy according to participants' answers. Following common practice for health literacy measures, four different levels were classified as insufficient, limited, sufficient, and excellent after having scores of the health literacy index. This review examines the measures of parents health literacy and reports their health behaviors. We analyzed the affecting factors of their health behaviors which were associated with health literacy.

Our research is a single-center, prospective, and observational survey study. Following the ethics committee approval dated December 31, 2020, and numbered E-48865165-302.14.01-, it was carried out between October 01, 2020, and June 01, 2021, at T.C Health Sciences University Ümraniye Training and Research Hospital.

Our research is in compliance with the Helsinki Declaration, (Good Clinical Practice) principles and does not contradict with the ethical rules of the subject research. Informed consent was obtained from each patient before the questionnaire, indicating that they voluntarily participated in the study.

Table 1. The comparison of demographic features among the groups preferring emergency departments and policlinics

Demographic features	Preferring ED		Preferring policlinic			
	n (200)	%	n (200)	%	χ^2	p
Gender					2.114	0.146
Male	66	33.0	80	40.0		
Female	134	67.0	120	60.0		
Marital status					5.582	0.018
Married	190	95.5	177	88.5		
Single	10	5.0	23	11.5		
Education level					23.977	0.000
Middle school	64	32.0	101	50.5	8.297	0.004
High school	58	29.0	63	31.5	0.207	0.649
Graduate	78	39.0	36	18.0	15.474	0.000
Income level					5.638	0.060
Lower Income than expense	81	40.5	60	30		
Equal income and expense	86	43.0	108	54.0		
Higher income than expense	33	16.5	32	16.0		

ED: Emergency department; Chi-square test.

Statistical Analysis

We measured health literacy using the scores on the 32 items and then a comprehensive general index of health literacy was constructed. Mean-based item scores were for participants who answered health literacy questions. To simply comparisons between scores on the general healthy literacy index, all scores were transformed to a point minimum 0 and maximum 50, health literacy index. The resulting four levels were evaluated as:

- >0–25 points – insufficient health literacy
- >25–33 points – limited health literacy
- >33–42 – sufficient health literacy
- >42–50 – excellent health literacy

The insufficient and limited health literacy levels were combined to a single level, limited health literacy (0–33).

Data were analyzed by Statistical Package for the Social Sciences. The distribution of data was demonstrated by Kolmogorov–Smirnov test. Means and standard deviations for the index and percentage distributions were measured for levels of limited health literacy for vulnerable groups. The distribution rate of demographic features was compared using Chi-square test among the groups preferring emergency departments and policlinics. To determine the effects of social factors on health literacy, a multivariate linear regression model was performed.

RESULTS

The 146 (36.5%) of total 400 parents were male, 254 (63.5%) were female. The median age of the participants was 34 years old. Parents participated in this study were classified as 20–29 years, 30–39 years, and older than 40 years aged. When 367 of 400 parents were married, 33 were single. The 165 of 400 (41.3%) graduated from middle school, 121 (30.3%) from high school, and 114 (28.5%) were graduates. When 200 parents preferred policlinics, other took their children to emergency department. The 65 (16.3%) of participants had more income than expense, 195 (48.5%) equal income-expense, and 141 (35.3%) had less income than expense.

There was no statistically significant relationship between gender and parents' preferring emergency departments, policlinics ($p>0.05$) (Table 1).

There was a statistically significant correlation between ages of participants and preferring health services. Parents aged between 20 and 29 years old preferred emergency departments more commonly than others ($p<0.05$) (Table 2).

There was a statistically significant relationship between parents' marital status and preferring emergency and policlinic departments. Single parents got health services more commonly in policlinics, married parents preferred emergency departments (Table 1). There was a statistically significant relationship between parents' educational level and preferring emergency departments, policlinics ($p<0.05$). The 50.5% of parents from middle school preferred policlinics, 39% of graduates preferred the emergency departments. Parents with higher education levels preferred emergency departments (Table 1).

There was no statistically significant relationship between household income status and parents preferring emergency departments, policlinics ($p>0.05$) (Table 1).

There were statistically significant higher rates of throat and gastrointestinal infected children taken to emergency depart-

Table 2. The comparison of ages among the groups preferring emergency departments and policlinics

Age groups	Preferring emergency department THLS-32 Index score			Preferring policlinic THLS-32 Index score			p
	Median	%25	%75	Median	%25	%75	
20–29 years old	1.00	10.00	23.50	12.00	7.00	17.00	0.012
30–39 years old	17.50	12.00	23.00	18.00	12.50	23.50	0.945
≥40 years old	18.00	15.00	26.00	18.00	11.50	20.50	0.268

THLS: Turkish Health Literacy Survey. Mann-Whitney U Test.

Table 3. The association of THLS-32 index score with demographic features among the groups preferring emergency departments

	THLS-32 Index score			p
	Median	%25	%75	
Gender				
Male	20.00	14.00	26.00	0.034*
Female	17.00	11.00	23.00	
Marital status				
Married	17.00	12.00	23.00	0.867*
Single	17.00	9.00	27.00	
Education level				
Middle school	19.00	15.50	23.00	0.354**
High school	17.00	1.00	22.00	
Graduate	17.00	11.00	26.00	
Income level				
Lower income than expense	20.00	14.00	27.00	0.068**
Equal income and expense	17.00	11.00	21,00	
Higher income than expense	17.00	12.00	19.00	

THLS: Turkish Health Literacy Survey; *: Mann–Whitney U Test; **: Kruskal–Wallis test.

ments, compared to policlinics. Preferring emergency departments for neurological diseases was statistical significantly lower ($p<0.05$).

Parents who preferred emergency departments did not have statistically significant association of THLS index median scores with the marital status, education levels, and income levels ($p>0.05$) (Table 3).

The median index scores of THLS-32 of males preferring emergency departments were statistical significantly higher than females ($p<0.05$) (Table 3).

Parents preferring policlinics did not reveal statistically significant association of THLS-32 index median score with gender, age, and educational level ($p>0.05$). The median index of THLS-32 was statistical significantly higher in married parents than single ones ($p<0.05$) (Table 4).

Evaluating the THLS-32 levels of parents participating in the study, they were classified as two groups insufficient-limited and sufficient-excellent. There was no statistical difference between THLS median scores and gender, marital status, educational, and income levels, among these two groups ($p>0.05$) (Table 5).

Among the THLS-32 scores, 1.3% of participants had excellent, 4.5% sufficient, 11.9% limited, and 82.3% had insufficient levels. There was no statistically significant association of parents preferring emergency departments, policlinics, and their THLS-32 levels ($p>0.05$) (Table 6).

DISCUSSION

National Academy of Medicine describes health literacy as an individual's capacity to obtain process and understand basic health information and services needed to make appropriate health decisions (1). Defining health literacy achieves people

Table 4. The association of THLS-32 index score with demographic features among the groups preferring policlinics

	THLS-32 Index score			p
	Median	%25	%75	
Gender				0.076*
Male	18.00	12.00	22.00	
Female	16.00	10.00	21.00	
Marital status				0.011*
Married	18.00	12.00	22.00	
Single	11.00	7.00	16.00	
Education level				0.149**
Middle school	18.00	12.00	22.00	
High school	15.00	11.00	21.00	
Graduate	16.00	6.00	20.00	
Income level				0.538**
Lower income than expense	18.00	13.00	23.00	
Equal income and expense	17.00	10.00	21.00	
Higher income than expense	17.00	6.00	21.00	

THLS: Turkish Health Literacy Survey; *: Mann–Whitney U Test; **: Kruskal–Wallis Test.

to understand evaluate, communicate, and use health information and services during their lives for health well-being. Enhancing health literacy will help to develop health services and provide health equity in population (1, 2). In this study, we investigated the major determinants of health literacy that have a great control over health. If we clarify the causes of disparities in health literacy, then we can improve the health status by providing optimal health services.

One of four parents has low health literacy that affects using their health information and decision for their children's health. Health literacy provides parent acquisition of knowledge, attitude and behaviors that help to manage prevention of disease and acute and chronic illness care. Morrison et al. (3) demonstrated that parents had low literacy depending on poor nutrition knowledge, higher obesity rates, more medication errors, more emergency department use, and poor asthma knowledge behaviors. Morrison et al. (4) determined that low health literacy had an effect an emergency department utilization. About 30% of parents of children presenting to emergency departments had lower health literacy. The literature supported that accessible, understandable health information instructions to all patients, regardless of their literacy and education levels, should be provided. The study revealed that visual aids, graphs, and pictures could increase patient understanding and breaking down the instructions into small parts, showing the key points avoiding medical jargon could help understanding. National data indicated that more than one-third of the US adults have limited health literacy, which contributes to poor health outcomes, health-care quality, and patient safety (5).

Shi et al. (6) demonstrated that urban residents compared to rural residents, women compared to men, younger compared to older, had higher proportion of participants with adequate health literacy. Participants with more education and higher income in households had higher health literacy. Gender, age, education, and household income were independent associates with the level of health literacy.

We investigated the influences of the gender on health-care services. Bertakis et al. (7) found that women had primary care clinic visits more commonly than men. She had higher charges for primary care, emergency treatment, and diagnostic services than men. Women had higher medical care service utilization than men. Abacıgil et al. (8) found no relationship between health literacy and gender. Tanriover's study demonstrated lower level of health literacy in women (9). Haerian et al. (10) did not observe association of health literacy with gender.

Sorensen et al. (11) observed lower health literacy in men than in women. When some literature supported that men had lower levels of health literacy compared to women, others supported the women had lower levels (12–14). In this study, we observed that higher levels of health literacy in men than women. We think that disparities of socioeconomic and educational status play role in these gender differences of health literacy. Inadequate education levels of women who have been participated in this study can be responsible for this lower health literacy.

The previous literature supported those women maintained more consistent social relationship throughout life social interaction and networks caused to enrich people's health literacy skills. Education has a positive relationship with individual

Table 5. The relationship between THLS-32 index score levels and demographic features of parents

	THLS -32 Index score levels						p
	Insufficient limited		Sufficient excellent		Sum		
	n	%	n	%	n	%	
Gender							0.069
Male	126	35.3	12	54.5	138	36.4	
Female	231	64.7	10	45.5	241	63.6	
Marital status							0.599
Married	330	92.4	21	95.5	351	92.6	
Single	27	7.6	1	4.5	28	7.4	
Education level							0.466
Middle school	148	41.5	9	40.9	157	41.4	
High School	108	30.3	9	40.9	117	30.9	
Graduate	101	28.3	4	18.2	105	27.7	
Income levels							0.267
Lower income than expense	127	35.6	10	45.5	137	36.1	
Equal income and expense	176	49.3	7	31.8	183	48.3	
Higher income than expense	54	15.1	5	22.7	59	15.6	

THLS: Turkish Health Literacy Survey; Chi-square test.

Table 6. The distribution of THLS-32 levels among the groups preferring emergency departments and policlinics

THSL-32levels	Departments						p
	Emergency departments		Policlinics		Sum		
	n	%	n	%	n	%	
Insufficient	152	78.4	160	86.5	312	82.3	0.075
Limited	30	15.5	15	8.1	45	11.9	
Sufficient	8	4.1	9	4.9	17	4.5	
Excellent	4	2.1	1	0.5	5	1.3	

THLS: Turkish Health Literacy Survey; Chi-square test.

health literacy levels. Lower health literacy was found to be associated with lower socioeconomic status, lower education attainment, employment status, and language problems (12).

Sociodemographic differences play on important role in the risk of low health literacy. It is seen more commonly among elderly, men, ethnic minorities, and low socioeconomic status in the United States (12, 13). The decrease in physical and mental skills can be responsible for lower levels of health literacy among the elderly (13).

The literature concluded that older people preferred emergency departments for health services (15). Bozkurt and Demirci (16) found that in a study of participants visiting primary care center were older than 65 years and 85.1% of them had limited health literacy. These results supported the older people had poorer health literacy. This can be result of their cognitive impairment. While investigating the parents visits of emergency and policlinics, we determined a statistically significant relationship between parents' ages and visits. In this study, participants aged between 20 and 29 years had more visits for emergency departments than policlinics. We found that younger, inexperienced, and stressful parents preferred emergency departments compared to policlinics. We think that anxiety, stress of hardworking, and city life may enhance the parents to prefer emergency departments for getting urgent health services to save time.

Andrews et al. (17), demonstrated that lower educational levels of parents enhanced the emergency department visits for their children. They could not decide as if their children really need urgent examination. Lee et al. (18) research determined that higher edu-

cation levels of residents increased the health literacy. In this study, we demonstrated that there was a negative relationship between education level and policlinic visits. When education levels of parents decrease, their policlinic visits increased. Nakayoma et al. (19) also did not find correlation between health-care literacy and education level. Our study results reveal that parent' health literacy, regardless of education levels, reflects the parents' desires for health services from emergency departments, to save time. Hooker et al. (20) found that emergency department visits increased twice between 2010 and 2014 years. They demonstrated that it continues to increase faster than the rate of population growth.

Gibney et al. (21) compared the association between health status, health behaviors, and health-care unitarization within different levels of social status in Irish population. They analyzed that improvement in health literacy of population may reduce the prevalence of long-term chronic health conditions and result in fewer hospital visits. Health literacy development will cause to improve behaviors in lower social status and to decrease the social disparities in the health outcomes.

Villani and Mortensen (22) demonstrated that people with lower incomes preferred emergency departments more commonly than ones with higher incomes. This can be result of free of charge in emergency health services.

Literature supports that people with lower incomes have lower education level and lower health literacy. When people with lower incomes try to overcome economic problems, they could not afford educational and health needs. Eichler et al. (23) demonstrated that people with lower household incomes had lower health literacy. Caldwell EP investigated the factors influencing health literacy. They determined that there was a moderate, positive correlation between adolescent health literacy and income (24). Our study result was not similar to literature. There was no significant correlation between health literacy and household income. Anxiety about health problems of their children makes parents impatient and sensible. They demand urgent health services from emergency departments to clarify the health conditions of their children as quickly as possible. They prefer emergency services for not only acute, but sometimes for chronic disease managements as well.

The previous studies revealed that gender, education level, and socioeconomic status influenced health literacy of individuals. Accurate sources of health information provide the benefit of having adequate health decision. Health literacy informed communication strategies should be improved within all families. They benefit from clear information that improves health outcomes, health-care quality, and safety.

Ethics Committee Approval: The Ümraniye Training and Research Hospital Clinical Research Ethics Committee granted approval for this study (date: 31.12.2020, number: E-48865165-302.14.01-).

Informed Consent: Written informed consent was obtained from the families of the patients who participated in this study.

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Hasta Onamı: Yazılı hasta onamı bu çalışmaya katılan hastaların ailelerinden alınmıştır.

Çıkar Çatışması: Yazarlar çıkar çatışması bildirmemişlerdir.

Mali Destek: Yazarlar bu çalışma için mali destek almadıklarını beyan etmişlerdir.

Yazarlık Katkıları: Fikir – SA, Eİ; Tasarım – SA, Eİ; Denetmele – SA; Kaynaklar – SA; Malzemeler – SA; Veri Toplanması ve/veya İşlemesi – SA, Eİ; Analiz ve/veya Yorum – SA; Literatür Taraması – SA, Eİ; Yazıyı Yazan – SA, Eİ; Eleştirel İnceleme – SA.

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