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A Study on Determining Health Literacy and Neighborhood Perceptions Among Hospitalized Children and Their Parents in a City in Turkey

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Summary

Objective: This study investigates the relationship between health literacy and neighborhood perception among hospitalized children and their parents. Health literacy, encompassing the ability to understand and utilize health information, directly influences health outcomes. Health literacy levels are known to be low in Turkey. This study aims to assess the health literacy levels of children and parents, their perceptions of their neighborhoods, and the interaction between these variables.

Materials and Methods: A cross-sectional study design was employed to evaluate health literacy and neighborhood perception among hospitalized children and their parents. The research was conducted between March 1 and October 30, 2024, at a University Health Practice and Research Hospital. Data collection instruments included the Child Demographic Information Form, the Health Literacy Scale for School-Aged Children, the Parent Demographic Information Form, the Health Literacy Scale, and the Perceived Neighborhood Disorder Scale.

Results: A total of 648 individuals participated in the study, comprising 324 children and 324 parents. Among the parents, 33.3% were aged 31–39, while 36.5% of the children were aged 11–14. Sociodemographic comparisons revealed statistically significant differences in information access, evaluation, and application based on the number of children ($p < 0.01$).

Conclusion: While the sociodemographic characteristics of parents, as well as the age, gender, and education level of children, were found to influence health literacy, no significant relationship was identified between health literacy and neighborhood perception. The findings highlight the importance of nurses taking active roles in initiatives aimed at improving health literacy.

Keywords: Nursing, Neighborhood perception, Health literacy, Child, Hospitalization

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Introduction

Health literacy refers to the ability to effectively use reading, writing, verbal, and numerical skills in a manner that positively contributes to an individual's personal health. These skills are crucial for making informed health-related decisions [1, 2]. Health literacy is defined as "personal knowledge and competencies that enable people to access, understand, evaluate, and use information and services in ways that promote and sustain health and well-being for themselves and others." For both children and parents, the ability to receive, process, and comprehend basic health information and services is essential to effectively manage health and make appropriate health decisions [1, 2].

According to the Ministry of Health in Turkey, it is estimated that health literacy is insufficient or limited in 7 out of 10 individuals [3]. Similarly, in the United States, more than 43 million people have inadequate health literacy [2]. A broader perspective enriches the understanding of how health literacy facilitates conscious health decisions, while also highlighting new pathways where limited health literacy can result in adverse health outcomes, including worsened health status and increased healthcare costs [2,4]. Evidence indicates a discrepancy between patients' average reading abilities and their capacity to interpret and comprehend health information, as managing health and complex illnesses requires more than basic reading and information processing skills [2].

The promotion of health literacy is deeply rooted in the broader context of health promotion and enhancement [5]. As a comprehensive reflection of socioeconomic development, health literacy is influenced by multiple factors, including politics, economics, education, social structures, culture, and the overall level of health development. Health literacy levels are strong predictors of individual health outcomes [6]. Higher digital health literacy has been associated with better health status, more positive health behaviors, and increased health knowledge [7]. Individuals with inadequate or low health literacy often experience difficulties understanding prescribed treatments, participating in medical decision-making, adhering to medical recommendations, and attending follow-up appointments [5]. Likewise, Šulinskaitė et al. (2022) demonstrated that individuals with higher health literacy are more inclined to understand health-related information, communicate effectively with healthcare professionals, and adopt positive health behaviors [8].

Conversely, individuals with insufficient health literacy are more susceptible to engaging in risky health behaviors, face higher rates of hospital readmissions, and are less likely to utilize preventive health services [9]. A study conducted by Liu et al. (2020) in China revealed that individuals with low health literacy possess limited knowledge about chronic disease prevention, which correlates with lower levels of preventive health behaviors [10]. Consequently, poor health literacy can lead to inadequate management of chronic illnesses, increased morbidity, premature mortality, and significant strain on healthcare resources [6]. Furthermore, inadequate health literacy negatively impacts healthcare utilization, patient satisfaction, and nurse-patient relationships [2].

Neighborhood perception refers to how individuals experience and evaluate their living environment. This perception is shaped by various factors, including the physical environment (e.g., cleanliness, infrastructure, safety), the social environment (e.g., neighbor relations, social support), and access to services (e.g., healthcare, education, transportation). Neighborhood perception can influence individuals' health behaviors, stress levels, and overall health status [11]. Notably, environmental perception plays a critical role in child development and parents' health-related decision-making processes [12].

Examining the relationship between health literacy and environmental factors is critically important, particularly in communities with high social disadvantage, for developing strategies to improve access to healthcare services and disease management [6]. However, most existing studies have focused on healthy children and adults, largely overlooking the impact of individuals' environmental conditions. Consequently, data on the health literacy levels of hospitalized children and their parents in relation to their neighborhood perceptions are limited [2].

This study aims to assess the health literacy and neighborhood perceptions of hospitalized children and their parents and to elucidate the relationship between these two variables. Effective interventions targeting health literacy have the potential to improve health outcomes and reduce health disparities. Research indicates that individuals with lower education levels tend to have lower health literacy

compared to those with higher education. Living in socioeconomically disadvantaged neighborhoods may expose individuals to environmental disadvantages, and personal socioeconomic characteristics can negatively affect health literacy and, consequently, health outcomes.

In this context, nurses play a vital role in comprehensively assessing health literacy and neighborhood perceptions by considering children, families, and their environments.

While health literacy encompasses individuals' abilities to access, understand, and apply health-related information, neighborhood perception reflects the extent to which an individual perceives their living environment as safe, supportive, and resource-accessible [6]. Adverse neighborhood conditions may hinder access to health information and negatively influence health behaviors. Therefore, it is posited that an individual's environmental perception may indirectly affect their health literacy [2]. Health literacy levels are shaped not only by individual factors but also by social and environmental determinants. Understanding this relationship is crucial for reducing health inequities at the societal level [13].

Most existing studies on health literacy outcomes have been conducted among healthy children and adults or have neglected the influence of the individual's surrounding environment. Thus, limited information is available regarding health literacy outcomes among hospitalized children and their parents with varying neighborhood perceptions. This study aims to evaluate the health literacy and neighborhood perceptions of hospitalized children and their parents, and to explore the relationship between these two variables.

Materials and Methods

Study type

This cross-sectional study aims to assess the health literacy and neighborhood perceptions of hospitalized children and their parents, as well as to examine the relationship between health literacy and neighborhood perceptions. The study population comprises children and their parents who received treatment at a state University Health Practice and Research Hospital between March 1 and October 30, 2024.

The research questions are as follows:

- What are the health literacy levels and neighborhood perceptions of children and their parents?
- What factors influence the health literacy levels and neighborhood perceptions of children and their parents?
- Does neighborhood perception affect the health literacy levels of children and their parents?
- Do parents' health literacy levels and neighborhood perceptions influence the health literacy levels and neighborhood perceptions of their children?

Study group

Based on a post-hoc power analysis conducted for the sample comprising children and their parents, the statistical power of the study was calculated to be 97%, with an effect size of 0.2 (small), a 5% margin of error, and a sample size of 324 participants.

The inclusion criteria for the study were as follows: children had to be hospitalized for inpatient treatment with a minimum stay of 24 hours, the fact that the child is attending school be aged between 7 and 18 years and be accompanied by a parent who served as the primary caregiver (mother, father, or legal guardian). Furthermore, both the child and the parent were required to be literate in Turkish and to provide voluntary informed consent to participate in the study.

Participants who declined to participate or submitted incomplete or invalid questionnaire responses were excluded from the study. Among those who refused participation, some reported lack of time, while others did not provide any specific reasons.

Dependent and independent variables

The independent variables of this study include the gender, age, education level, hospitalization status, health education, and neighborhood satisfaction of both children and parents. The dependent variables consist of the Child Demographic Information Form, the Health Literacy Scale for School-Aged

Children for the children, and the Parent Demographic Information Form and Health Literacy Scale for the parents.

Procedures

This study employed a cross-sectional research design to evaluate health literacy levels and neighborhood perceptions among hospitalized school-age children, adolescents, and their parents. The research was conducted between March 1 and October 30, 2024, at a University Health Application and Research Hospital. Data collection instruments included the Child Demographic Information Form, the Health Literacy Scale for School-Aged Children (HLSC), the Parent Demographic Information Form, the Health Literacy Scale (HLS), and the Perceived Neighborhood Disorder Scale (PNDS).

The Child and Parent Demographic Information Forms were developed by the researchers based on a review of the relevant literature [2,5,7,14]. The HLSC, developed by Paakkari et al. (2016), assesses health literacy in school-aged children across five domains: theoretical knowledge (items 1, 5), practical knowledge (items 4, 7), critical thinking (items 3, 9), self-awareness (items 8, 10), and citizenship (items 2, 6). The scale uses a 4-point Likert-type response format (1: Strongly disagree, 2: Disagree somewhat, 3: Agree somewhat, 4: Strongly agree). The total score, calculated by summing the item scores, ranges from 10 to 40 points and is categorized as follows: low (10–25 points), moderate (26–35 points), and high (36–40 points) health literacy. The Turkish version of the scale was validated by Haney (2018) [14,15]. In the present study, the Cronbach's alpha coefficient was 0.87, compared to Haney's original value of 0.77

The HLS, developed by Toçi et al. (2013) and adapted into Turkish by Bayık-Temel and Aras (2017), measures health literacy levels in adults. It consists of four subdimensions: Understanding Information, Access to Information, Evaluation/Assessment, and Application/Use [16,17]. The scale comprises 25 items with a 5-point Likert-type response scale ranging from 1 ("I am unable/I have no ability/It is impossible") to 5 ("No difficulty"). Total scores range from 25 to 125, with higher scores indicating better health literacy. Low scores reflect insufficient, problematic, or weak health literacy, while high scores indicate sufficient or excellent health literacy. The scale's overall Cronbach's alpha value is 0.92, with subdimension alphas ranging from 0.62 to 0.79. In this study, the Cronbach's alpha was 0.95.

The Perceived Neighborhood Disorder Scale (PNDS), developed by Ross and Mirowsky (1999) and adapted into Turkish by Elamlı et al. (2019), was used to assess neighborhood perception [18,19]. The original scale reported a Cronbach's alpha coefficient of 0.869. In the current study, the Cronbach's alpha was calculated as 0.85 for the child version and 0.86 for the parent version. Prior to administration with children aged 6–12 years, the scale's suitability was evaluated, confirming that the items were simple, clear, and appropriate for the cognitive level of this age group. Parental support was provided when necessary. A pilot application (n=10) indicated that children understood the items and provided consistent responses. To enhance comprehension, the scale was administered under the researcher's guidance. Consequently, it was concluded that the PNDS is appropriate for use with children in this age range. Children who consented to participate completed the intake questionnaire, HLSC, and PNDS, while their parents completed the parental intake questionnaire, HLS, and PNDS. To avoid mutual influence, the scales were administered individually to parents and children in the presence of the researcher and the participant only. The face-to-face administration of the scales took approximately 5 to 10 minutes per participant.

Statistical analysis

The study data were analyzed confidentially using the SPSS version 29 software package. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were employed alongside inferential statistical methods such as the t-test, ANOVA, and Pearson correlation analysis. To assess the normality of the data distribution, skewness and kurtosis values were examined; since these values fell within the range of ±1.5, the data were considered normally distributed. The homogeneity of variances was tested using Levene's test. Internal consistency reliability was assessed via Cronbach's alpha coefficient. Post-hoc analyses, including Tukey's and Gabriel's tests, were conducted to identify specific group differences. A p-value of ≤0.05 was regarded as statistically significant.

Ethical considerations

In this study, voluntary informed consent forms were provided to hospitalized children and their parents, and written consent was obtained from all participants. The research was conducted in

accordance with the ethical principles outlined in the Declaration of Helsinki. Prior to the commencement of the study, ethical approval was granted by the Medical Research Ethics Committee of Kahramanmaraş Sütçü İmam University (Approval No: 2024/02-01, Date: January 29, 2024).

Results

This section presents the findings of the study, which aimed to evaluate the health literacy and neighborhood perceptions of hospitalized children and parents, and to examine the relationship between these two concepts.

Table 1. Socio-demographic data of parent participants (n=324)

Parent Demographic Data	n	%
Parent Age		
18-30 Years	54	16.7
31-39 Years	108	33.3
40-50 Years	106	32.7
51- + Years	56	17.3
Parent Gender		
Female	221	68.2
Male	103	31.8
How many children do you have?		
0-2 children	151	46.6
3-5 children	159	49.1
5 more children	14	4.3
Parent Gender		
Married	289	89.2
Single	35	10.8
Family Type		
Nuclear family	260	80.2
Extended family	55	17.0
Broken family	9	2.8
Parent Education Level		
Primary school	83	25.6
Middle school	95	29.3
High school	85	26.2
University	56	17.3
Graduate degree	5	1.6
Parent Employment Status		
Not working	208	64.2
Working	116	35.8
Parent Income Status		
Income equals expenses	233	71.9
Income less than expenses	55	17.0
Income greater than expenses	26	11.1
Inpatient Treatment Status in Hospital		
Yes	185	57.1
No	139	42.9
Have You Received Health Education?		
No	196	60.5
Yes	128	39.5
Are You Satisfied with the Neighborhood You Live In?		
Yes	294	90.7
No	30	9.3

n: Count, **%:** Column percentage.

Table 1 presents the socio-demographic data of the parent participants in the study. Among the parents, 33.3% are aged between 31-39 years, and 68.2% are female. 49.1% of the parents have 3-5 children; 89.2% of the parents are married, and 80.2% belong to nuclear families. 29.3% of the parents have completed middle school, and 64.2% do not work in any income-generating jobs. 71.9% of the parents report that their income is equal to their expenses. 57.1% of the parents have previously been hospitalized for treatment, but 60.5% have never received any health education. Finally, 90.7% of the parents expressed satisfaction with their neighborhood and indicated that they like where they live (Table 1).

Table 2. Socio-demographic data of child participants (n=324)

Demographic Features	n	%
Child Age		
7-10 Years	116	35.8
11-14 Years	118	36.5
15-18 Years	90	27.7
Child Gender		
Female	159	49.1
Male	165	50.9
Child School Level		
Primary School	112	34.6
Middle School	115	35.5
High School	97	29.9
Perceived Income Status		
Income equals expenses	210	64.9
Income is less than expenses	55	16.9
Income is more than expenses	59	18.2
Inpatient Treatment Status in Hospital		
No	197	60.9
Yes	97	39.1
Received Health Education		
No	202	62.3
Yes	122	37.7
Are You Satisfied with the Neighborhood You Live In?		
Yes	233	71.9
No	91	28.1

n: Count, **%:** Column percentage.

In the study, 36.5% of the participating children were aged between 11 and 14 years, 50.9% were male, and 35.5% were enrolled in middle school. 64.9% reported that their income was equal to their expenses. Additionally, 60.9% indicated that they had not previously received inpatient treatment in a hospital, and 62.3% had not received any health-related education. 71.9% of the children reported being satisfied with the neighborhood they live in (Table 2)

Table 3. Socio-demographic characteristics of parents and their impact on health literacy and neighborhood perception (n:324)

Factors	Number of Parents Children			Parental Education Status					Inpatient Treatment Status in Hospital		Have You Received Health Education?	
	0-2 Children	3-5 Children	5 + Children	Primary School	Middle School	High School	University	Graduate	Yes	No	Yes	No
	X̄±SS	X̄±SS	X̄±SS	X̄±SS	X̄±SS	X̄±SS	X̄±SS	X̄±SS	X̄±SS	X̄±SS	X̄±SS	X̄±SS
HLS/ Access to Information	21.70±3.30[a]	20.18±4.02	18.42±2.50	18.83±3.74[a]	20.24±4.18[a]	22.05±2.82	22.48±2.47	25.00±0.00	20.37±3.74	21.41±3.68	21.50±3.87	20.36±3.60
Test	**f:9.906; p:0.000**			**F: 15.341 p:0.000**					t: 2.484 p:0.013		t: 1.960 p:0.051	
HLS/ Understanding Information	19.04±4.02	18.59±4.32	15.50±4.56[a]	16.84±4.12[a]	18.43±3.99	18.91±4.27	21.03±3.47	23.00±2.82	18.08±4.40	19.46±3.90	19.49±4.67	18.13±3.86
Test	**f:4.619 p:0.011**			**F:10.803 p:0.000**					**t: 2.928 p:0.004**		**t: 2.837 p:0.004**	
HLS/ Valuation/Evaluation	32.61±5.82	31.16±7.13	26.00±5.76[a]	28.39±7.11[a]	31.67±6.43	32.82±5.93	33.89±5.44	38.60±1.51	31.36±6.91	31.95±6.22	32.71±7.18	30.90±6.14
Test	**f:7.404 p:0.001**			**F: 9.704 p:0.000**					t: .799 p:0.425		t: 1.797 p:0.073	
HLS/ Using the App	23.50±3.66	22.63±4.26	19.17±3.37[a]	20.69±4.04[a]	22.77±4.02	23.72±3.63	24.62±3.22	27.60±1.23	22.53±4.06	23.35±3.99	23.61±4.56	22.41±3.60
Test	**f:8.294; p:0.000**			**F:12.954 p:0.000**					t: .787 p:0.070		t: 2.619 p:0.023	
Health Literacy Total Score	24.21±3.78[a]	23.14±4.58[a]	19.77±3.81[a]	21.18±4.36[a]	23.28±4.29	24.38±3.75	25.51±3.29	28.55±1.25	23.08±4.42	24.04±4.06	24.33±4.76	22.95±3.86
Test	**f:8.292; p:0.000**			**F:13.659 p:0.000**					t: 2.000 p:0.046		t: 2.849 p:0.018	
PNDS/ Physical Disorder	10.23±2.95	10.72±2.43	11.21±1.25	10.72±2.42	10.55±2.30	10.23±2.99	10.80±2.98	8.20±2.68	10.82±2.43	10.11±2.89	11.00±2.90	10.20±2.44
Test	F:1.823 p:0.163			F: 1.486 p:0.206					t: 2.400 p:0.017		t: 2.682 p:0.008	
PNDS / Physical Order	5.90±1.18	5.61±1.47	5.78±0.42	5.72±1.31	5.60±1.46	5.71±1.23	6.05±1.16	6.40±1.67	5.65±1.35	5.87±1.27	5.80±1.42	5.71±1.25
Test	F:1.880 p:0.154			F: 1.369 p:0.224					t: 1.471 p:0.142		t: .566 p:0.572	
PNDS / Social Disorder	13.41±4.00	14.22±3.59	16.64±1.98[a]	15.01±3.44	13.76±3.80	13.32±3.45	13.96±4.46	10.40±3.04	14.37±3.68	13.38±3.88	14.26±4.04	13.75±3.62
Test	**F:5.578 p:0.004**			F: 3.436 p:0.009					t: 2.338 p:0.020		t: 1.195 p:0.233	
PNDS / Social Order	11.61±2.73	11.49±2.62	12.14±1.95	11.73±2.71	11.37±2.58	11.50±3.00	11.69±2.17	12.40±2.07	11.55±2.68	11.60±2.61	11.44±2.86	11.65±2.50
Test	F: .414 p:0.662			F: .367 p:0.832					t: .158 p:0.875		t: .710 p:0.478	
PNDS Total Score	10.30±1.88	10.51±1.84	11.44±0.76	10.79±1.91	10.32±1.64	10.21±1.74	10.62±2.16	9.35±0.94	10.63±2.04	10.34±1.69	10.63±2.04	10.34±1.69
Test	F: 2.651 p:0.072			F: 1.784 p:0.132					t: 1.717 p:0.087		t: 1.381 p:0.168	

*X̄: Mean. SD: Standard deviation; t: Independent groups t test; F: Anova test; p: Significance level; a: Advanced significance test

Table 4. Socio-demographic characteristics of children and their relationship with health literacy and neighborhood perception (n:324)

Factors	Number of Parents Children			Parental Education Status			Child Gender		Have You Received Health Education?		Are You Satisfied with the Neighborhood You Live In?	
	7-10 Children	11-14 Children	15-18 Children	Primary School	Middle School	High School	Girl	Boy	Yes	No	Yes	No
	X̄±SS	X̄±SS	X̄±SS	X̄±SS	X̄±SS	X̄±SS	X̄±SS	X̄±SS	X̄±SS	X̄±SS	X̄±SS	X̄±SS
Citizenship	5.20±1.30[a]	5.58±1.27[a]	6.03±1.21[a]	5.27±1.27	5.49±1.35	6.01±1.08[a]	5.88±1.20	5.26±1.28	5.91±1.22	5.38±1.27	5.49±1.34	5.87±0.99
Test	**F: 7.894 p:0.001**			**F: 6.980 p:0.000**			**t: 3.876 p:0.000**		**t: 3.075 p:0.002**		t: 1.797 p:0.074	
Theoretical Knowledge	5.20±1.37[a]	5.82±1.03	6.07±1.12	5.24±1.36[a]	5.79±1.12	6.04±1.0	5.91±1.23	5.43±1.20	6.07±1.24	5.46±1.18	5.66±1.24	5.68±1.23
Test	**F: 11.003 p:0.001**			**F: 9.147 p:0.000**			**t: 3.048 p:0.000**		**t: 3.688 p:0.000**		t: .062 p:0.951	
Practical Information	5.59±1.22	5.79±1.20	6.04±1.22	5.57±1.12[a]	5.78±1.17	6.05±1.22	6.01±1.23	5.56±1.17	6.03±1.28	5.66±1.17	5.77±1.24	5.85±1.16
Test	F: 2.548 p:0.080			**F: 3.019 p0.000**			**t:2.891 p:0.003**		t: 2.272 p:0.024		t: .395 p:0.681	
Critical Thinking	5.02±1.31[a]	5.60±1.17[a]	6.19±1.61[a]	5.15±1.26	5.45±1.18	6.14±1.30[a]	5.90±1.19	5.20±1.31	5.95±1.35	5.34±1.22	5.47±1.33	5.85±1.14
Test	**F: 16.678 p:0.000**			**F: 12.530 p:0.000**			**t:4.365 p:0.004**		**t: 3.518 p:0.000**		t: 1.795 p:0.074	
Self-Awareness	5.39±1.35[a]	5.89±1.33	6.06±1.52	5.45±1.38	5.78±1.29	6.10±1.53	6.10±1.34	5.42±1.40	6.03±1.51	5.61±1.34	5.78±1.44	5.72±1.33
Test	F: 4.847 p:0.009			F: 4.043 p:0.051			**t:3.875 p:0.000**		t: 2.188 p:0.030		t: .225 p:0.799	
HLSC Total Score	26.43±5.36[a]	28.69±4.96[a]	30.41±5.16[a]	26.70±5.28[a]	28.31±5.19[a]	30.35±5.08[a]	29.83±5.10	26.89±5.24	30.01±5.59	27.48±5.06	28.19±5.5	28.97±4.8
Test	**F: 11.197 p:0.000**			**F: 9.486 p:0.000**			**t:4.411 p:0.000**		**t: 3.550 p:0.000**		t: .896 p:0.371	
Physical Disorder	10.05±3.01	10.22±2.64	10.95±2.53	5.83±1.32	10.22±2.70	10.81±2.61	10.40±2.25	10.14±2.61	10.74±2.59	10.03±2.50	10.26±2.42	10.42±2.49
Test	F: 2.083 p:0.127			F: 1.402 p:0.248			t: .817 p:0.415		t: 2.161 p:0.032		t: .393 p:0.694	
Physical Order	5.80±1.30	5.83±1.44	5.82±1.21	5.82±1.32	5.85±1.44	5.78±1.21	5.70±1.28	5.59±1.36	5.70±1.28	5.65±1.26	5.84±1.18	4.85±1.58
Test	F: .017 p:0.983			F:0.045 p:0.956			t: .649 p:0.517		t: .055 p:0.956		**t: 4.800 p:0.000**	
Social Disorder	13.45±3.98	13.40±3.93	14.03±3.82	13.63±4.06	13.02±3.82	14.22±3.80	13.97±3.51	13.97±3.51	13.38±3.76	14.46±3.58	13.88±3.71	13.00±3.26
Test	F: .551 p:0.577			F: 1.861 p:0.158			t: 1.265 p:0.207		t: 2.436 p:0.016		t: .148 p:0.137	
Social Order	11.78±2.59	11.34±2.75	11.88±2.59	11.79±2.53	11.51±2.74	11.62±2.72	13.97±3.51	13.38±3.76	11.25±3.01	11.14±2.20	11.62±2.21	9.34±2.82
Test	F: .963 p:0.383			F: 0.246 p:0.782			t: .084 p0.933		t: .299 p:0.765		**t: 5.167 p:0.000**	
PNDS Total Score	10.28±2.05	10.20±1.74	10.67±1.92	10.35±2.03	10.15±1.72	10.61±1.95	10.28±1.74	10.10±1.78	10.52±10.02	11.42±12.41	10.40±1.75	9.40±1.57
Test	F: 1.203 p:0.302			F: 1.107 p:0.332			t: .785 p:0.433		t: 2.115 p:0.038		**t: 3.572 p:0.000**	

*X̄: Mean; SD: Standard deviation; t: Independent groups t test; F: Anova test; p: Significance level; a: Advanced dignificance test

In Table 3, in the statistical comparison made according to the socio-demographic data of parents, health literacy neighborhood perceptions and its components; the analysis made between the number of parents' children and the dimension of access to information, the dimension of evaluation/assessment, the dimension of application use. The total dimension of HLS and social disorder was found to be statistically significant ($p<0.01$). As a result of the advanced analysis, it was determined that the dimension of access to information originated from those with 2 children and below, the dimension of evaluation/assessment, the dimension of application use, and the total dimension of HLS originated from parents with 5 children and above. The educational status of the parent participants and the dimension of access to information, the dimension of understanding information, the dimension of evaluation/assessment, the dimension of application, the dimension of HLS total dimension was found to be statistically significant ($p<0.01$). As a result of the advanced analysis, it was determined that the dimension of access to information originated from parents with primary and secondary school education, the dimension of understanding information, the dimension of evaluation/assessment, the dimension of application use. The total dimension of HLS originated from parents with primary school education. A statistically significant result was found in the HLS information comprehension sub-dimension according to the status of parent participants receiving inpatient treatment and health education ($p<0.05$) (Table 3).

In Table 4, in the statistical comparison made of the socio-demographic data of the child participants according to health literacy, neighborhood perceptions and its components for school-age children; child age groups and citizenship dimension, theoretical knowledge dimension, critical thinking dimension, and HLSC total dimension were found to be statistically significant in the analysis ($p<0.01$). In the advanced analysis, it was found that child age groups and citizenship sub-dimension, critical thinking and HLSC total dimension were sourced from child participants between the ages of 6-10. In the analysis made between the school level of the child participants and citizenship dimension, theoretical knowledge dimension, practical knowledge dimension, critical thinking dimension and HLSC total dimension were found to be statistically significant ($p<0.01$). As a result of the advanced analysis, it was found that citizenship dimension and critical thinking were sourced from high school level. theoretical knowledge and practical knowledge dimensions were sourced from primary school level. On the other hand, HLSC total dimension was sourced from all school levels of the child participants. In the analysis made according to the gender of the child participants; In the analysis made between citizenship dimension, theoretical knowledge, practical knowledge, critical thinking, self-awareness and HLSC total dimension, it was found to be statistically significant ($p<0.01$). In the analysis made regarding the satisfaction with the neighborhood in which he/she lives, the analysis made between the physical order dimension, the social order dimension and the total dimension of PNDS was found to be statistically significant ($p<0.01$) (Table 4).

Table 5. Correlation analysis results for study variables

Variables	1	2	3	4
Parent HLS (1)	1			
Parent PNDS (2)	0.043	1		
Children HLSC (3)	-0.085	0.117	1	
Children PNDS (4)	-0.043	0.034	0.066	1

***** $p<0.05$

According to the results of the intragroup correlation analysis between child and parent study variables, no significant relationship was found between HLS and PNDS for children and parents ($p>0.05$) (Table 5).

Discussion

This study assumes a potential relationship between health literacy and neighborhood perception, with both factors possibly influenced by demographic characteristics. Accordingly, the relationship between the health literacy and neighborhood perceptions of hospitalized children and their parents, as well as the factors affecting these two constructs, will be examined in two sections, supported by relevant literature. Additionally, nursing approaches related to these factors will be discussed.

Parents' Health Literacy and Neighborhood Perceptions

Although the literature indicates a significant relationship between parents' health literacy and neighborhood perception, some studies suggest that this relationship may vary depending on contextual

factors. For instance, individuals with strong personal resources (such as higher education or familiarity with the healthcare system) may be able to minimize the impact of environmental disadvantages [20,21]. Studies have shown that low neighborhood safety and negative aspects of the physical environment can adversely affect parents' health behaviors and their access to health information [20,21]. Furthermore, parents with low health literacy levels reportedly experience greater difficulties in meeting their children's health-related needs, which may be related to a lack of social support within their living environments [22]. In summary, neighborhood perception can directly influence parents' ability to acquire, comprehend, and apply health information, highlighting the need for interventions at both individual and environmental levels [23].

The number of children in a family appears to significantly impact access to information, evaluation, application, health literacy, and perceptions of social disorganization. While health literacy was initially conceptualized primarily as the ability to read and understand medical information, it has since been expanded to include more complex skills such as accessing, evaluating, and applying health information [1]. This broader perspective has enriched our understanding of how health literacy contributes to informed health decision-making, while also revealing new pathways through which inadequate literacy may result in adverse health outcomes, including poorer health status and increased healthcare costs. An increase in the number of children under a parent's care is associated with significantly lower health literacy scores. This may be attributed to the increased demands on parents' time and resources, limiting their ability to engage fully with health literacy activities. In this context, pediatric nursing specialists can play a vital role in supporting parents to enhance their health literacy through educational programs, individualized counseling, and group-based social learning.

A significant association also exists between the number of children and neighborhood disorganization. It is suggested that families with many children tend to reside in rural areas, where perceived neighborhood safety is lower compared to urban settings, affecting individuals' sense of security [24]. Nurses can implement appropriate interventions by taking into account the social and environmental factors affecting these families, thereby fostering an environment conducive to the health and well-being of both individuals and families.

Parental education level has a significant and positive relationship with their ability to understand, evaluate, and apply health information, as well as with overall health literacy. Higher levels of education are consistently associated with better health literacy scores [6, 25, 26]. From a nursing perspective, increased parental health literacy facilitates communication between nurses and families, enabling more effective transmission of health information. Educated parents are more competent in making informed decisions regarding health services and recommendations, thereby enhancing the quality of care provided. Moreover, parental health literacy emerges as a critical factor influencing children's health status, underscoring the importance of nurses focusing on family education and support programs to improve public health outcomes.

Hospitalization and health education significantly affect the ability to understand health information. Limited health literacy is strongly associated with increased hospitalizations, readmissions, poor self-management, and adverse health outcomes. Consequently, health education is fundamental in improving health literacy levels [6]. Parents who have experienced hospitalization and received health education often have increased interaction with healthcare settings and disease management processes, which contributes to higher health literacy.

Nurses play a crucial role in enhancing health literacy by providing health education to hospitalized patients, helping them understand treatment procedures and develop self-management skills. These efforts reduce rehospitalizations and improve overall health outcomes. Through effective communication and empathy, nurses assist patients in comprehending health information better. Nurses can also organize individual counseling and group training sessions for parents, focusing on basic health information, disease symptoms, treatment processes, and ways to access health services to enhance health literacy. Additionally, nurses can facilitate support groups where parents share experiences and learn from each other, which can improve access to health services within neighborhoods.

Health Literacy and Neighborhood Perceptions of Hospitalized Children

Children's age significantly affects citizenship, theoretical knowledge, critical thinking, and overall health literacy. Research shows that students' health literacy varies across different age groups [5, 27]. To develop effective strategies for addressing health literacy in children, evaluations must consider the dependencies, ages, and developmental stages of these groups [28]. Nurses play a crucial role in this process by facilitating children's and adolescents' access to health-related information and by fostering critical thinking skills.

Similarly, children's school levels significantly influence their theoretical knowledge, practical knowledge, critical thinking, and health literacy. Variables such as the number of semesters completed and curriculum differences affect students' health literacy [5, 27]. From a nursing perspective, this underscores the need to develop tailored education and intervention strategies to enhance health literacy among children. Education is widely recognized as a key factor in achieving adequate health literacy and, consequently, good health outcomes [29]. Nurses should therefore focus on effective communication of health information, support the development of critical thinking skills, and promote healthy lifestyle habits in children. By employing appropriate educational methods, nurses can help raise children's awareness and understanding of health information.

A study conducted in South Africa highlighted gender-specific barriers to health literacy among children [30]. The findings suggest that male children tend to have lower health literacy levels, primarily due to prevailing gender norms and traditional notions of masculinity, which limit their help-seeking behaviors and access to health information [30]. Conversely, female children face challenges such as gender-based violence, social stigma, and cultural taboos, which negatively impact their health literacy. Adekola (2024) identified three main categories of gender-related barriers: gender roles and social norms, cultural beliefs, and gender-based violence and stigmatization. These factors restrict children's access to accurate health information. Therefore, it is essential for nurses to design and implement gender-sensitive health education programs and interventions aimed at overcoming these obstacles and promoting equitable access to healthcare services [30].

Health education is a fundamental approach to improving health literacy across population [6]. Nurses should facilitate access to health information for children and their families by implementing effective strategies that enhance health literacy. As a result, children are more likely to adopt healthy lifestyle habits, leading to improved overall community health.

The lack of a significant relationship between neighborhood perception and health literacy in this study suggests that access to health information is influenced not only by environmental factors but also by individual and cultural determinants. This finding indicates that the impact of neighborhood characteristics on individual behaviors may not always be direct. As Nutbeam (2008) emphasizes, health literacy depends not only on structural conditions but also on personal motivation and individual skills. While some studies argue that neighborhood safety and social environment influence health literacy [31, 32], others suggest that individual factors such as educational level, age, and experience with health services are more decisive [33, 34]. These findings highlight that the effect of neighborhood perception may vary depending on contextual factors.

Additionally, children's satisfaction with their neighborhoods influences their perceptions of the physical environment, social relations, and the overall neighborhood structure, which in turn affect their quality of life. Notably, neighborhood safety is directly linked to children's life satisfaction [35]. Therefore, health education and environmental factors jointly contribute to enhancing children's health literacy and quality of life by positively influencing their neighborhood perceptions.

Furthermore, children with higher health literacy levels tend to better understand how their environment impacts health, fostering greater awareness of the importance of safe and healthy neighborhoods, which enhances neighborhood satisfaction [36, 37]. From a nursing practice perspective, it is important to consider environmental determinants of children's health and to develop strategies that improve neighborhood satisfaction. Providing safe and supportive neighborhood environments is a key responsibility of nurses working in community health.

In conclusion, nurses can organize individual and group training sessions tailored for children. The use of visual aids such as brochures and videos can enhance the effectiveness of these educational efforts. Additionally, educational games and interactive applications, especially for younger children, can reinforce learning. Nurses can also develop personalized health plans based on the specific needs of children and their families, thereby improving family health literacy and facilitating access to health services. Evaluating the physical and social conditions of children's neighborhoods and understanding their impact on health literacy will enable nurses to design more effective community health interventions.

Conclusion

It has been observed that socio-demographic characteristics such as the number of children, educational status, and the health education received by parents have significant relationships with health literacy. Similarly, it has been concluded that socio-demographic factors such as children's age, gender, and educational level have determining relationships with health literacy. However, no significant relationship was found between health literacy and neighborhood perceptions.

Based on the findings of this study, it is recommended that nurses expand individual and group-based health literacy education programs targeting families and children. The lack of a significant relationship between neighborhood perception and health literacy suggests that environmental interventions should be considered alongside individual factors. Therefore, neighborhood-based health initiatives should be supported. Additionally, since the study sample was limited to hospitalized individuals, the generalizability of the results is restricted. Future research should be conducted with more heterogeneous and comparative samples to provide a broader understanding of the factors influencing health literacy.

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Conflict of Interest

The authors declare no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Author Contributions

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Hakan AVAN, Vedat ARGIN and Birgül VURAL. The first draft of the manuscript was written by Hakan AVAN and Vedat ARGIN and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript

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Limitations

Although the scale was deemed appropriate for the relevant age group, the need for age-specific adaptation studies remains a significant limitation. Moreover, the sample being limited to hospitalized children and their parents reduces the generalizability of the findings. The absence of comparisons with healthy individuals further restricts the contextual interpretation of the results. These limitations highlight the need for future studies employing more heterogeneous and comparative samples.

Ethical Approval

Approval for the conduct of the study was obtained from the Kahramanmaraş Sütçü İmam University Medical Research Ethics Committee (Decision No: 2024/02-01, Date: 29.01.2024). Children participating in the study and their parents were informed face-to-face about the purpose and procedure of the study, and informed consent was obtained from all participants included in the study. Permission for the use of the scales was obtained via email. No personal data were collected in the survey form.

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