ORIGINAL RESEARCH

The correlation between children's health literacy level and healthy eating self-efficacy

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Abstract

Background

The school environment provides an important opportunity for children and educators to develop health education and health literacy the ability to make rational health decisions and identify and determine factors that affect health. The aim of this study is to determine the correlation between health literacy and eating self-efficacy levels of primary school students and the affecting factors.

Methods

The study was conducted with 486 fourth graders studying in a primary school located in eastern Turkey between September 2021 and June 2022. The data were collected through face-to-face interviews using the Personal Information Form, the Health Literacy for School-Age Children Scale (HLSAC), and the Healthy Eating Self-Efficacy Scale for Children (HESES-C). Data were analyzed by number, percentage, mean, independent samples t-test, non-parametric Mann–Whitney U and Kruskal–Wallis tests, and Pearson's correlation tests.

Results

The gender of the students and the education level of their mothers had a statistically significant correlation with their mean HESES-C and HLSAC scores scores ($p<0.05$). There was a significant negative correlation between the students' HLSAC and their HESES-C mean scores.

Conclusions

According to the findings of the study, the students had a moderate level of health literacy and a low level of healthy eating self-efficacy. There was a negative relationship between health literacy levels and healthy eating self-efficacy.

Keywords: Child, Health Literacy, Nutrition, Self-Efficacy, School Nurse

Introduction

The expectations of individuals benefiting from health services are increasing day by day. Modern healthcare services have moved to a whole new level thanks to advances in technology. Parallel with this, it imposes new roles on individuals, such as taking responsibility and knowledge about health[1,2]. "Health literacy" emerges as a key concept in fulfilling these roles[3]. Health literacy refers to the skills that enable individuals to acquire, understand, evaluate, and apply information in order to make decisions and take actions regarding their own health status[4]. Health literacy allows for understanding and reducing health problems with its learning and developable features[5]. The current literature indicates that insufficient health literacy may lead to results related to lack of health information, inability to access and use healthcare services (preventive and therapeutic), ineffective management of diseases, medication errors, incidence of chronic diseases, and increased mortality rates[6]. Therefore, the health literacy level of individuals becomes important in health protection and promotion.

The childhood stage of life is a period when emotional and physical development processes take place, and health-related behaviors and abilities are developed along with basic cognitive skills. The level of health literacy plays a role in the healthy life behaviors acquired in this period to continue during adulthood[3,7]. Examining children's health literacy levels is essential for lifelong sustainable development, social growth, and health development. Health literacy is a determinant of health, an important power in maintaining equality in health, and a key empowerment strategy[8]. Improvement in health literacy skills can benefit the health, growth, and development of children as well as community health 5. Improving health literacy offers great potential to promote children's health and for them to become more knowledgeable and skilled consumers of costly and limited medical resources in adulthood[9].

Another important concept in the acquisition of basic health behaviors is self-efficacy. Self-efficacy is a psychological concept that refers to individuals' belief in their ability to be successful and their efforts to accomplish tasks in the processing and use of health information. Self-efficacy determines how a person perceives health and applies health knowledge to health actions[10]. Healthy eating self-efficacy refers to a person's belief or perceived level of efficacy in choosing and preferring healthy foods[11,12]. Healthy eating self-efficacy is a concept affected by health literacy. Numerous studies have reported that the level of health literacy affects healthy lifestyle behaviors and health outcomes of children and adolescents[13–16]. In their study, Reid et al. reported that

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low levels of health literacy were correlated with energy balance and body mass index[17].

The school-age period is crucial as it is a time when dietary habits are acquired alongside individual and societal habits. It marks the beginning of making food choices independently from parental control and a time when dietary habits undergo significant changes[18]. Schools are an environment that reaches a significant portion of children; therefore, they are important locations for developing health literacy. The school environment provides an important opportunity for children and educators to develop health education and health literacy, i.e., the ability to make rational health decisions and identify and determine factors that affect health[5]. When studies are examined, it is seen that primary school in particular is a period when healthy eating behaviors are at risk, and fast food culture in particular is widespread[19,20]. Consequently, it is thought that healthy eating self-efficacy and health literacy levels will be effective in the child's gaining healthy eating behavior during this period. Low health literacy in children has been associated with unhealthy eating habits and weight gain[21]. It has been reported that enhancing health literacy during childhood, particularly among younger primary school children, contributes to making consistent decisions about healthy eating[22]. However, the literature still contains limited studies examining the health literacy levels of primary school children[23,24], and there appears to be no studies investigating the relationship between health literacy and healthy eating self-efficacy. School nurses have responsibilities such as individualized and community-based health education, health promotion and health literacy development for different target groups in the school environment[25]. School nurses play an important role in helping students maintain healthy diets, food choices and healthy lifestyles[26]. Therefore, it is thought that healthy eating self-efficacy and health literacy levels will be effective in the child's gaining healthy eating behavior in this period. When the literature is examined, a limited number of studies can be found on this subject. Therefore, this study was designed to determine the correlation between primary school students' health literacy and their eating self-efficacy levels. In this study, answers to the following questions were sought:

1-What is the health literacy level of children?

2-What is the healthy eating self-efficacy level of children?

3-What are the factors associated with children's health literacy levels and eating self-efficacy?

4-Is there any correlation between children's health literacy levels and eating self-efficacy?

Methods

This is relational descriptive study.

Participants and Recruitment

This descriptive study was conducted in a city center in eastern Turkey between September 2021 and June 2022. The population of the study consisted of a total of 822 students studying in the fourth grade of nine primary schools selected by a random sampling method from three regions determined from 44 primary schools affiliated with the Ministry of National Education by using a stratification method. The study sample comprised 486 students who voluntarily participated in the study and had obtained necessary parental permissions, out of a total of 822 students attending schools selected through a random sampling method.

Prior to commencing the study, consultations were held with school administrators. An informational invitation letter detailing the study was distributed to parents via their children. Only those children whose parents provided consent were included in the research. After obtaining the necessary legal permissions for the study, an appointment was requested by meeting with the schools where the data will be collected. The students were informed about the purpose of the study in the classroom environment by the researchers at the appointment date and time. The students whose parents gave consent for their participation in the study were included in the study. It took an average of 15-20 minutes to collect data from 4th graders using face-to-face interview method.

Measures

'Personal Information Form', 'Health Literacy for School-Age Children Scale' and 'Healthy Eating Self-Efficacy Scale for Children' were used as data collection tools.

Personal Information Form

This form includes 13 questions on some characteristics of parents and children (educational background, employment status, number of siblings).

Healthy Eating Self-Efficacy Scale for Children (HESES-C)

The scale which was developed by Story et al.,28, and whose Turkish validity and reliability study was conducted by Kabasakal et al., (2020) is three-point Likert type consisting of 9 items and one dimension. While rating the scale, one marks 0 point for "Not at all difficult" option, 1 point for the "Slightly difficult" option, and 2 points for the "Very difficult" option. Total score ranges between 0 and 18. Higher scale scores signify an increase in self-efficacy for healthy eating 12. The internal consistency of the scale was α=0.677 for boys and α=0.674 for girls. In this study, the Cronbach's alpha value of the HESES-C was calculated as .71.

Health Literacy for School-Age Children Scale (HLSAC)

The scale was developed by Paakkari et al., (2016)29 and its validity and reliability study was conducted by Haney (2018). The scale aims to assess health literacy of school-age children concerning five areas including 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 is a 4-point Likert type (Absolutely not true=1, Not entirely true=2, Slightly true=3, Definitely true=4). The total score varies between 10-40 points. Based on the scale score range, a score between 10-25 is described as low health literacy, a score between 26-35 as moderate, and a score between 36-40 as high health literacy. The Cronbach's alpha value of the scale was reported as .77 30. In this study, the Cronbach's alpha value of the scale was calculated as .76.

Data analysis

The data were transferred to the SPSS 20 statistical software in the computer environment Data were presented as mean ± standard deviation, median, and range (minimum and maximum values) for variables determined by measurement, and as counts and percentages for variables determined by counting. Normality tests were conducted on the data.

Table 1. Distribution of student descriptive characteristics

Characteristics	Number	%
Age (X̄ ±SD)	9.41±.57 (Min=8, Max=11)	
Gender		
Female	282	58.0
Male	204	42.0
Mother education status		
Illiterate	17	3.5
Primary school	192	39.5
High school	175	36.0
University and above	102	21.0
Mother employment status		
Employed	104	21.4
Unemployed	382	78.6
Father education status		
Illiterate	12	2.5
Primary school	128	26.3
High school	173	35.6
University and above	173	35.6
Father employment status		
Employed	449	92.4
Unemployed	37	7.6
Family type		
Nuclear	398	81.9
Large	88	18.1
Family income status		
Low	85	17.5
Medium	335	68.9
High	66	13.6
Having a chronic illness		
Yes	30	6.2
No	456	93.8
Information tracking status		
Yes	359	73.9
No	127	26.1
Information resources (n=359)		
Internet	19	55.2
Television	198	35.7
Book/magazine	128	5.3
Other	14	3.8

Table 2. Distribution of students' HESES-C and HLSAC mean scores

Scale	Mean	±SD	Min	Max
HESES-C total score	3.44	2.76	0	17
HLSAC total score	31.01	6.13	10	40
HLSAC Theoretical Knowledge Subscale	6.18	1.43	2	8
HLSAC Practical Knowledge Subscale	6.44	1.51	2	8
HLSAC Critical Thinking Subscale	5.88	1.65	2	8
HLSAC Self-Awareness Subscale	6.45	1.56	2	8
HLSAC Citizenship Subscale	6.04	1.49	2	8

Table 3. The correlation between some characteristics of the students and HLSAC and HESES-C total mean scores

Characteristics	HLSAC Score (X̄ ±SD)	HESES-C Score (X̄ ±SD)
Gender		
Female	31.54±5.91	3.20±2.84
Male	30.28±6.35	3.77±2.63
Test/p	t= 2.242, p= .02	t= -2.230, p= .02
Mother education status		
Illiterate	30.11±6.22	4.29±3.29
Primary school	30.54±6.06	3.79±3.01
High school	31.72±6.18	2.97±2.48
University and above	30.83±6.11	3.46±2.55
Test/p	KW=6.825, p= .06	KW=7.915, p= .04
Having a chronic illness		
Yes	29.66±5.81	4.10±3.47
No	31.10±6.14	3.40±2.71
Test/p	MU=5599.50, p=.09	MU=6186.00, p= .37

Tablo 4. The correlation between of the students and HLSAC and HESES-C total mean scores

Factor	HLSAC /Subscales	HESES-C
HLSAC	1	r= -.219**, p= .000
HLSAC Theoretical Knowledge Subscale	1	r = -.170**, p=.000
HLSAC Practical Knowledge Subscale	1	r = -.157**, p=.001
HLSAC Critical Thinking Subscale	1	r = -.173**, p=.000
HLSAC Self-Awareness Subscale	1	r = -.192**, p=.000
HLSAC Citizenship Subscale	1	r = -.184**, p=.000

**p<0.01

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Continuous data between two independent groups showing normal distribution were evaluated using the independent samples t-test. The Mann-Whitney U test was used to compare continuous data between two independent groups not showing normal distribution, while the Kruskal-Wallis analysis of variance was used to compare continuous data among more than two groups. Spearman correlation analysis was used to determine the relationship between scale scores. The statistical significance level was set at $p < 0.0527$.

Ethics statement

Before starting the study, approval was obtained from the human research ethics committee of a university (dated 30/06/2021 and numbered 07). After obtaining the ethics committee approval, a preliminary application was made to the Ministry of National Education. After the preliminary application was approved, written permission (dated 16.08.2021 and numbered E-45468433-605.01- 29604182) was obtained from the Provincial Directorate of National Education to conduct the study. Consent was obtained from the parents of the students before starting the study.

Results

It was observed that 58.0% of the students having a mean age of 9.41±.57 were female and 48.0% were male. While 39.5% of the mothers of the students were primary school graduates and 78.6% did not work in an income generating job, 71.2% of their fathers had a high school or higher education level and 92.6% were working in an income generating job. While 81.9% of the students had a nuclear family, 68.9% had a family with a middle income level. While 6.2% of the students had chronic diseases, 73.9% of them followed information about health from internet (55.2%), television (35.7%), books/magazines (5.3%), and other sources (3.8%) (Table 1).

The students' HESES-C total mean score was 3.44±2.76 and their HLSAC total mean score was 31.01±6.13 points. Their subscale mean scores were 6.18±1.43 points in HLSAC Theoretical Knowledge Subscale, 6.44±1.51 points in HLSAC Practical Knowledge Subscale, 5.88±1.65 points in HLSAC Critical Thinking Subscale, 6.45±1.56 points in HLSAC Self-Awareness Subscale and 6.04±1.49 points in HLSAC Citizenship Subscale (Table 2).

While the HLSAC mean score of female students was 31.54±5.91, the score was 30.28±6.35 points for male students. While the HLSAC mean score of the students of illiterate mothers was 30.11±6.22, it was 30.54±6.06 for primary school graduates, 31.72±6.18 for high school graduates, and 30.83±6.11 for university graduates. As a result of the statistical analysis, it was determined that there was a statistically significant correlation between the students' HLSAC mean score, their gender and the education level of their mother ($p<0.05$) (Table 3).

While the HESES-C mean score of female students was 3.20±2.84, the HESES-C mean score of male students was 3.77±2.63 points. The HESES-C mean score was 4.29±3.29 in the students of illiterate mothers; 3.79±3.01 of primary school graduates, 2.97±2.48 for high school graduates and 3.46±2.55 for university graduates. As a result of the statistical analysis, there was a statistically significant correlation between the students' HESES-C mean score and their gender and the education level of their mothers ($p<0.05$) (Table 3).

A negative statistically significant correlation was found between students' total HLSAC scores, including the subscales of Theoretical Knowledge, Practical Knowledge, Critical Thinking, Self-Awareness, and Citizenship, and their HESES-C mean scores ($p<0.05$) (Table 4).

Discussion

Health literacy, which is considered an important issue in the health protection and promotion, is an important health determinant that includes obtaining, understanding, interpreting and acting on health-related information[1,4]. Health literacy has a variable structure gained in the lifelong learning process that begins in early childhood. Therefore, identifying children and adolescents as the target group in health literacy interventions and encouraging healthy behaviors may be effective in reducing future health risks[3].

In this study, it was observed that the health literacy levels of the children were moderate. Some studies on children's health literacy level have reported that the majority of children had a moderate level of health literacy[31,32] . However, Sönmez (2015) and Jafari (2021) stated in their studies that most of their students had insufficient health literacy skills[21,33]. In the literature, it has been reported that low health literacy is associated with poor nutritional knowledge and behaviors, high obesity rates[34], and the inability to benefit effectively from health services in children[2,35]. For this reason, it is important for both individual and community health to adopt a health literacy approach that increases the knowledge and skills that children need to acquire for protecting and promoting their health and guides them to make the right choices for health[36,37].

In this last study, the gender of the students, their status of having a chronic disease and their mothers' education level were found to be correlated with HLSAC scores. Similarly, in other studies, educational status, age, body mass index and place of residence, parent's occupation[38], grade level, school success, education level of parents, income level of families, receiving health education and having a previous medical history are among the factors affecting health literacy status/level[21,39].

In school age period, children's eating habits are shaped and unhealthy food preferences are common. For this reason, it is important to have self-efficacy for healthy and balanced nutrition, which is critical for the healthy growth and development of children and their school success[19,40]. In this study, students' healthy eating self-efficacy levels were found to be low. When other studies evaluating the eating self-efficacy of school-age children are examined, contrary to findings of the present study, it is observed that the children's nutritional self-efficacy level is moderate[41–44] and high[45]. This suggests that the subject is due to the fact that it has been studied in different age groups.

In this study, it was observed that the gender of the students and the education level of their mother were correlated with the level of healthy eating self-efficacy. Parents play an important role in helping children acquire healthy eating behavior. Mothers' education level is one of the main factors affecting nutritional knowledge, the type of food prepared, eating behaviors and healthy eating habits of children 46. Although it is stated in the literature that the high level of education of the mother will positively affect the healthy eating habits of the children[47], in this study, the healthy eating self-efficacy mean score of the students of illiterate mothers was higher. Some studies reported the gender of the

child[43,49,50], education level of the mother[45,51], and having a chronic disease[43,47,51] were associated with eating self-efficacy.

In this study, it was observed that there was a negative correlation between children's health literacy and healthy eating self-efficacy levels. This is thought to be due to the low age group of the children included in the study. In other words, it suggested that children did not have healthy eating self-efficacy despite their moderate level of health knowledge.

Limitations

This study has several limitations. The first limitation is that it was conducted in a single province in eastern Turkey. The second limitation is the reliance on self-reported data from children. The third limitation is that only children with parental consent were included in the study.

Conclusion

According to the results of the study, children's health literacy levels are moderate, while their healthy eating self-efficacy levels are low. There is a negative relationship between health literacy and healthy eating self-efficacy in children. Despite primary school children's high health literacy, their low self-efficacy regarding nutrition indicates a significant need for support during this period. In gaining self-efficacy for healthy eating habits, children require not only health-related information but also a supportive environment from school, community, and family. To enhance children's healthy eating self-efficacy and increase their health literacy, it is necessary to create an environment conducive to a healthy eating culture, access health-related information from appropriate sources, and put this information into practice. Therefore, awareness initiatives that require the cooperation of family, school, and children are needed.

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