Araştırma Makalesi / Original Research Article *https://doi.org/10.35232/estudamhsd.718574*

LEVEL OF HEALTH LITERACY AND ASSOCIATED FACTORS AMONG RURAL AND URBAN SECONDARY SCHOOL STUDENTS IN SANLIURFA PROVINCE, TURKEY

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Abstract
Low health literacy is a major source of poor health status among all age group. Aim of this study is to investigate level of health literacy and factors associated with it among children in the rural and urban secondary school in Sanliurfa province of Turkey. The cross –sectional study was carried out among children aged 12-15 years old in urban and rural areas in the Southeast Anatolia Region of Turkey. Health Literacy Survey Questionnaire (HLS-EU-Q47) was used for data collection. In this study, general internal consistency (Cronbach's alpha) of the HLS-EU-Q47; was found to be 0.916. Total 1,997 chidden participated from 18 schools in the study, 47.2% were females and 52.8% were males. The age of the participant's ranged from 12 to 15 years. The mean (SD) of measured weight, height, and BMI of the students were 47.2 ± 10.7 kg, 154.4 ± 7.8 cm, and 19.6 ± 3.5 kg/m2, respectively. The prevalence of obesity, overweight and underweight were 6.5%, 13.8%, and 6.3% respectively. The prevalence of having daily breakfast, soft-drink, fruit, and tooth brushing frequency were 53.6%, 14.4%, 39.3%, and 38.5% respectively. Generally, the HL level was very low among the children in this study.
Keywords: Health literacy, school children, rural health, urban health, parent education.

KIRSAL VE KENTSEL YAŞAMDAKİ ORTAOKUL ÖĞRENCİLERİNDE SAĞLIK OKURYAZARLIĞI DÜZEYİ VE İLİŞKİLİ FAKTÖRLER, ŞANLIURFA TÜRKİYE
Düşük sağlık okuryazarlığı, tüm yaş grupları arasında kötü sağlık durumunun önemli bir nedenidir. Bu çalışmanın amacı, Türkiye'nin Şanlıurfa ilindeki kırsal ve kentsel ortaokuldaki çocuklar arasında sağlık okuryazarlığı düzeyini ve bununla ilişkili faktörleri araştırmaktır. Bu çalışma Türkiye'nin Güneydoğu Anadolu Bölgesi'ndeki kentsel ve kırsal alanlarda 12-15 yaş arası çocuklar arasında gerçekleştirilen . kesitsel tipte bir çalışmadır. Veri toplama için Sağlık Okuryazarlığı Anketi (HLS-EU-Q47) kullanılmıştır. Bu çalışmada, HLS-EU-Q47'nin genel iç tutarlılığı (Cronbach's alpha); 0.916 olarak bulunmuştur. Çalışmaya 18 okuldan toplam 1.997 kişi katıldı,% 47.2'si kadın,% 52.8'i erkekti. Katılımcının yaşı 12 ile 15 arasında değişmekte idi. Öğrencilerin ölçülen ağırlık, boy ve VKİ ortalamaları (SD) sırasıyla 47.2 ± 10.7 kg, 154.4 ± 7.8 cm ve 19.6 ± 3.5 kg / m2 idi. Obezite, aşırı kilo ve düşük kilo prevalansı sırasıyla% 6.5,% 13.8 ve% 6.3 idi. Günlük kahvaltı, meşrubat, meyve ve diş fırçalama sıklığı sıklığı sırasıyla% 53.6,% 14.4,% 39.3 ve% 38.5 idi. Genel olarak, bu çalışmada sağlık okuryazarlığı düzeyi çocuklar arasında çok düşük tespit edildi.
Anahtar Kelimeler: Sağlık Okuryazarlığı, okul çocukları, kırsal sağlık, kentsel sağlık, ebeveyn eğitimi.

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Geliş tarihi / Received : *11.04.2020,* ***Kabul Tarihi / Accepted:*** *15.05.2020*

Nasıl Atıf Yaparım / How to Cite: *Gökler ME, Mehmet N, Mollahaliloğlu S. Level of Health Literacy and Associated Factors Among Rural and Urban Secondary School Students in Sanliurfa Province, Turkey. ESTÜDAM Public Health Journal. 2020;5(2):168-75.*

Introduction

Low health literacy is a major source of poor health status among all age groups. Health literacy (HL) has been addressed as one major public health issue silently affecting all population. Studies showed that around 80 million American adults are affected by low HL (1). Literacy provides the skills that enable individuals to understand and communicate health information and concerns. Literacy is defined as a set of reading, writing, basic mathematics, speech, and speech comprehension skills (2). HL defined as "the capacity to which individuals can obtain, process, and understand basic health information needed to make appropriate health decisions" (3). The individuals with adequate health literacy can make right decisions to improve their health and well-being (4). Health literacy is the bridge between the literacy (and other) skills and abilities of the individual and the health context.

The HL is of concern to everyone involved in health promotion and protection, disease prevention and early screening, health care and maintenance, and policy making. Health literacy skills are needed for dialogue and discussion, reading health information, interpreting charts, making decisions about participating in research studies, using medical tools for personal or familial health care (5). From a public health perspective, children and young people constitute a core target group for health literacy research and intervention as during childhood and youth, fundamental cognitive, physical and emotional development processes take place (6) and health-related behaviors and skills develop. As a result, these stages of life are regarded as crucial for healthy development, as well as for personal health and well-being throughout adulthood (7,8). Moreover, health literacy is understood as a variable construct that is acquired in a life-long learning process, starting in early childhood (9). Hence, targeting children and young people with health literacy interventions can help promoting healthy behaviors and reduce future health risks.

Priority of public health for preventing childhood Obesity and increasing HL, few intervention studies have evaluated the influence of HL on weight-related child outcomes. The prevalence of childhood obesity has increased significantly over the previous four decades, stabilizing over the past decade, with approximately one-third of US children being classified as obese (10). The understandability of health information is of public concern. High percentages of adults have limited ability to use print materials to accomplish their tasks, and many health education materials are written at a level higher than these adults can comprehend based on literacy in this filed. When considering children, parents and caregivers play an important role in providing healthy eating and physical activity opportunities.

Researchers from different countries have investigated the relationship between health literacy and adult populations health status; however, very few studies have been carried out directly with children and adolescent population, leading to a significant gap in literature (11,12). The situation is the same in Turkey, researchers have focused on adult population; however, studies with children cannot be found. The aim of the study to investigate level of health literacy and factors associated with it among children in the secondary school in East of Turkey.

Materials and Method

Research design and location

This cross-sectional study was conducted among secondary school students getting education in the urban and rural areas of Şanlıurfa between January 2017 and June 2017. The study was conducted on a sample of secondary school students from rural and urban areas in Şanlıurfa Province located in the Southeast Anatolia Region. Sanlıurfa is among the less developed provinces compared to west part of country, especially its rural areas are underdeveloped. Based on the register as of 2017 TurkStat, the population of Sanlıurfa totals 1.985.753 people (13). There are 204,084 students (56,7% are male and 34,2 % are in rural areas) at the Sanlıurfa's secondary schools.

Study group

The minimum sample size was 2,750 with a margin of error of 1%, and considering the frequency of obesity as 8%. Seven counties (Haliliye, Eyyubiye, Karaköprü, Birecik, Hilvan, Suruc, Siverek) where dietitian service is provided were included in the study. The number of students to choose from each districts was chosen in proportion to the population's distribution Total 18 schools were randomly selected from seven counties. There were 2933 students in 18 schools

Study procedure

The questionnaires used in the study were filled in by the students under supervision in about 30 min. The specially designed questionnaire form included questions about socio-demographic characteristics (age, gender, parents' education level and working status, family income status, a family history of chronic disease, student's history of any disease), eating behavior (breakfast consumption, fruit consumption, soft-drink consumption), physical activity and sedentary behavior (moderate-to-vigorous physical activity, time spent with screens such as television, smartphones, tablet PCs and computers), tooth brushing frequency and self-rated health.

We used European Health Literacy Survey Questionnaire (HLS-EU-Q47) to assess health literacy. HLS-EU-Q47 is a self-report scale developed to evaluate the health literacy of at least primary school graduated (14) HLS-EU-Q47 contained 47 items measuring health literacy. The lowest score is 47 and the highest is 188. Total scores were standardized to be between 0 and 50. The resulting four levels were 'inadequate' (0–25), 'problematic' (>25–33), 'sufficient' (>33–42) and 'excellent' (>42–50) health literacy. To detect vulnerable groups, the 'inadequate' and 'problematic' levels were combined to a single level, called 'limited health literacy' (0–33). In this study general internal consistency (Cronbach's alpha) of the HLS-EU-Q47; was found to be 0.916.

After the completion of the questionnaire, body height and weight of each student were measured and recorded. Obesity was assessed by using WHO criteria (< 85th percentile, normal; 85 – 95th percentile, overweight; and ⩾ 95th percentile, obese) (15). The detailed protocol for the study and the questionnaire were obtained from the previous Health Behavior in School-aged Children (HBSC) study (16).

Statistical analysis

Data were analyzed using the Statistical Package for the Social Sciences 20.0. We used descriptive statistics (frequencies, proportions, means, and medians) to assess the demographic characteristics and the health literacy. Data were analyzed by using chi-square test as a univariate analysis and multiple logistic regression as a multivariate analysis. The multivariate logistic regression model included independent variables that were found to be significant (for variables at $p < 0.10$ significance level in univariate analysis). Odds ratios and 95%

confidence intervals were calculated for the variables associated with health literacy.

Ethical clearance

The required permissions for conducting the study were obtained from school administration, Harran University Ethics Committee (approval number 12/08.12.2016) and informed verbal consent was obtained from each student and their parents.

Results

Of the 1,997 (%68.2) students included in the study, 47.2% were females and 52.8% were males. The age of the students ranged from 12 to 15 years, with a mean age of 12,97±0,57 years. The mean (SD) of weight, height, and BMI of the students were 47.2 ± 10.7 kg, 154.4 ± 7.8 cm, and 19.6 ± 3.5 kg/m2, respectively. Of the students comprising the study group, 16.7% were considered adequate health literacy (38.46 ±4.47) and 83.2% limited health literacy (18.54 ±10.55).

Table 1: Sample characteristics of the study group.

Characteristics		Adequate health literacy n %		Limited health literacy n %		Test Statistics X^2;p
Gender	Male	165	15.6	890	84.4	2,065; 0,151
	Female	170	18.0	772	82.0	
Residence	Urban	231	18.0	1049	82.0	**4,130; 0,042**
	Rural	104	14.5	613	85.5	
Educational level of mother	Illiterate	119	12.9	802	87.1	**32,637; <0,001**
	Primary school	175	19.7	715	80.3	
	High school	23	20.7	88	79.3	
	University	14	42.4	19	57.6	
Employment status of mother	Unemployed	294	16.7	1462	83.3	0,011; 0,916
	Employed	41	17.0	200	83.0	
Educational level of father	Illiterate	21	8.6	222	91.4	**19,536; <0,001**
	Primary school	201	16.7	1000	83.3	
	High school	72	20.4	281	79.6	
	University	33	23.7	106	76.3	
Employment status of father	Unemployed	42	11.9	312	88.1	**7,432; 0,006**
	Employed	293	17.8	1350	82.2	
Family income (monthly)	<500 TL	61	9.9	558	90.1	**42,333; <0,001**
	500-1500 TL	147	17.5	692	82.5	
	>1500 TL	116	24.6	355	75.4	
A family history of chronic disease	No	177	16.2	915	83.8	0,554; 0,457
	Yes	158	17.5	747	82.5	
Student's history of any disease	No	284	16.9	1395	83.1	0,147; 0,701
	Yes	51	16.0	267	84.0	

The prevalence of obesity, overweight and underweight were 6.5%, 13.8%, and 6.3% respectively. The prevalence of having daily breakfast, soft-drink, fruit, and tooth brushing frequency were 53.6%, 14.4%, 39.3%, and 38.5% respectively. Distribution of students' health literacy according to BMI, eating behavior, physical activity and sedentary behavior are given in table 2.

Table 2: Sample characteristics of the study group.

Variables		Adequate health literacy n %		Limited health literacy n %		Test Statistics X^2;p
Body mass index	Underweight	12	9.5	114	90.5	**21,715; <0,001**
	Normal	228	15.6	1238	84.4	
	Overweight	70	25.5	205	74.5	
	Obese	25	19.2	105	80.8	
Daily breakfast consumption	Yes	134	16.7	793	83.3	**6,670; <0,001**
	No	201	17.0	869	83.0	
Daily soft-drink consumption	Yes	293	11.9	1416	88.1	1,158; 0,282
	No	42	17.8	246	82.2	
Daily fruit consumption	Yes	177	14.5	1036	85.5	**10,549; <0,001**
	No	158	18.8	626	81.2	
Daily tooth brushing frequency	Yes	167	17.1	1062	82.9	**23,248; <0,001**
	No	168	14.6	600	85.4	
Self-rated health	Excellent and good	285	14.6	1234	85.4	**17,950; <0,001**
	Fair and poor	50	20.2	428	79.8	
Daily time spent with screens	<4 hr	107	13.6	584	86.4	1,260; 0,262
	≥4 hr	228	21.9	1078	78.1	
Moderate-to-vigorous physical activity	No	175	18.8	1003	81.2	**7,580;0,006**
	Yes	160	10.5	659	89.5	

The estimated crude ORs for area, educational level of mother, educational level of father employment status of father, family income, body mass index, daily breakfast consumption, daily fruit consumption, daily tooth brushing frequency, self-rated health, and moderate-to-vigorous physical activity were statistically significant. After multivariate logistic regression analysis, educational level of mother, family income, body mass index, daily tooth brushing consumption, self-rated health remained significant in the model (Table 3).

Table 3: The variables associated with health literacy were determined by a multivariate logistic regression analysis.

Variables		Crude OR (95% CI)	Adjusted OR (95% CI)
Settlements	Urban	1	1
	Rural	**1,298 (1,01-1,67)*****	1,17 (0,89-1,54)
Educational level of mother	Illiterate	**4,97 (2,43-10,17)*****	**3,01 (1,28-7,06)***
	Primary school	**3,011 (1,48-6,12)****	**2,64 (1,15-6,05)***
	High school	**2,819 (1,23-6,46)***	**2,54 (1,04-6,23)***
	University	1	1
Educational level of father	Illiterate	**3,29 (1,82-5,96)*****	1,10 (0,54-2,23)
	Primary school	**1,55 (1,02-2,36)***	0,78 (0,46-1,32)
	High school	1,22 (0,76-1,94)	0,82 (0,48-1,35)
	University	1	1
Employment status of father	Unemployed	**1,61 (1,14-2,27)****	0,92 (0,62-1,37)
	Employed	1	1

Family income (monthly)	<500 TL	**2,99 (2,13-4,19)*****	**2,41 (1,60-3,61)*****
	500-1500 TL	**1,54 (1,17-2,03)****	1,32 (0,97-1,79)
	>1500 TL	1	1
Body mass index	Underweight	1	1
	Normal	1,75 (0,95-3,22)	1,27 (0,68-2,39)
	Overweight	**0,54 (0,39-0,73)*****	**0,55 (0,39-0,76)*****
	Obese	0,77 (0,49-1,22)	0,86 (0,52-1,40)
Daily breakfast consumption	Yes	**1,37 (1,08-1,74)****	1,25 (0,96-1,61)
	No	1	1
Daily fruit consumption	Yes	**1,48 (1,18-1,87)****	1,25 (0,96-1,61)
	No	1	1
Daily tooth brushing frequency	Yes	**1,78 (1,41-2,26)*****	**1,54 (1,20-1,99)****
	No	1	1
Self-rated health	Excellent and good	1	1
	Fair and poor	**1,98 (1,44-2,72)*****	**1,54 (1,20-2,17)***
Moderate-to-vigorous physical activity	No	**1,39 (1,10-1,76)****	1,24 (0,96-1,60)
	Yes	1	1

** p < 0.05, ** p < 0.01, *** p < 0.001.*

Discussion

The study demonstrated that general HL level of the children was low. The various factors influenced their HL level. The findings show that HL level was different by residences of the participants, educational level of parents, employment status of father, family income, participants body mass index, daily breakfast consumption, daily fruit consumption, daily tooth brushing frequency, self-rated health, and moderate-to-vigorous physical activity. Pervious scientific literacy shows the association between health literacy and socio-demographic factors, including family income, education background and age (17-21). A USA study demonstrated people living in rural areas are more likely than those in mixed urban-rural areas to have low levels of health literacy. Lower health literacy may result in poor health outcomes among rural cancer patients and contribute to disparities in cancer care (22). The rural area residents suffered more from low functional health literacy, compared with their urban counterparts (23). HL levels were significantly associated with annual household income, father's education level, and mother's education level. Those whose annual household income was high had higher HL levels than those whose annual household income was low. The relationship between HL levels and parents' education level was significant in this study; specifically, the HL level of participants whose parents had a postgraduate education was the lowest. Interestingly, the HL levels of students whose parents were teachers were the highest for both mother and father's occupation (24), according to these results, we can see that higher education level of parents did not really affect children's HL but the occupation really influence HL level of children's. A study from Finland shows that perceived health literacy was higher among adolescents who participated in sports club activities (25). Generally, people who care more about their health are more active on doing sport and they read information related to health. The current study also examined the relationship between BMI and HL level, the result determined that over or under weight participants have low HL. Child health literacy was negatively correlated with BMI Z-scores in overweight children in New York City (26). Finds of the study and other previous studies from different regions shows that various factors affect

HL level among children. People with good HL are more likely to adopt healthier behaviors. Good HL enables individuals to protect themselves, their family and community members from various risks.

This study shows the influence of health literacy in obtaining habits such daily breakfast consumption, daily fruit consumption, daily tooth brushing frequency and moderate-to-vigorous physical activity in children. By increasing the level of health literacy in children, it is possible to develop the right nutrition behaviors, good oral health and physically active lifestyles. Additionally, interventions that will increase the level of health literacy may have a positive impact on obesity prevalence in the longer term. Health literacy should be used as an important tool in reducing inequalities.

There are some strengths of this study, the study was conducted multiple study centers and study schools were selected from urban and rural areas. The data related to health literacy was collected using self-reported method so information bias may occur.

Conclusions

The findings of the study show that HL level was different between rural and urban residences, educational level of parents, employment status of father, family income, body mass index, daily breakfast consumption, daily fruit consumption, daily tooth brushing frequency, self-rated health, and moderate-to-vigorous physical activity. Based on the findings of the study we suggest that the school students must be educated and improve their health literacy. The health literacy education policy must be developed and implement in the region.

Acknowledgement

We would like to thanks Sanliurfa Health Directorate nutritionists, and all the students who participated in this study.

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