

Original Research Article

The health literacy level and eating behaviours of the teachers working at the city center of Eskisehir Turkey

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ABSTRACT

Background: The purpose of this study is to determine the level of Health Literacy of teachers who work at the city center of Eskisehir and to evaluate the relation with eating behaviors and some of possible related variables.

Methods: This cross-sectional research study was conducted between 1st of March and 28th of April 2017 with the primary, secondary and high school teachers. Study group consists of 825 teachers who agreed to participate to the study. The Questionnaire form includes the socio-demographic variables of teachers, potential factors associated with the health literacy, Turkish Health Literacy Scale 32 (THLS-32) and The Three-Factor Eating Questionnaire.

Results: The mean age was 41.91 ± 8.80 years ranging from 22 to 65 years. The median score of the general index of the THLS-32 was found to be as 32.81 and 52.1% of our study population were found to be above the median score. The participants showed a negative correlation between the scores of 'emotional eating', 'uncontrolled eating' scale and THLS-32, positive correlation between 'cognitive restraint' eating scale THLS-32.

Conclusions: The health literacy level of teachers is important because of effecting both themselves and students. The teachers and the health care providers should collaborate on the topic more and they should be encouraged to participate in health related programmes.

Keywords: Eating behaviours, Eskişehir, Health literacy, Teachers

INTRODUCTION

Health Literacy has been defined 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 The term health literacy comprises the cognitive and social skills which determine the motivation and ability of individuals to obtain, process and understand the health information in a different approach which enable individual lifestyle changes, life quality improvements, prevention of diseases, and maintenance of good health.^{2,3}

Health literacy refers to the ability of people to develop information and efficacy acting on them, to raise awareness of the determinants of health and to understand basic health information and services in order to make appropriate health decisions.⁴ Individuals with low Health Literacy are reported to have difficulties in understanding the information given by healthcare providers, reading the medical labels and following a good treatment compliance. Therefore, the effectiveness of preventive care services on these people is worse. However, they are more likely to have a greater risk for hospitalization, and have a higher rate of emergency service admissions and all these increase the cost of healthcare expenses.⁴⁻⁷

Individual differences like general literacy, age, race, gender and the experiences of previous health problems may have an impact on Health Literacy. Cognitive skills including visual and auditory functions, memory performances, communicative and social abilities have also a relationship with the level of Health Literacy.²

Comparative results of the European health literacy survey (HLS-EU) study evaluated Health Literacy in eight European countries in 2011 and found out that Netherlands had the highest health literacy score and Bulgaria had the least. The prevalence of adequate health literacy is ranged between 37.9% and 71.4% and differs for each country.³ According to a multicentered study in Turkey in 2014, Tanrıöver et al reported that 35.4% of the population had adequate health literacy level.⁶

People with high level of Health Literacy are prone to make healthier choices in their life. Healthy nutrition which is one of the most important lifestyle behaviors, is also effected by health literacy level.^{8,9}

Previous studies revealed that individuals with adequate health literacy were more likely to consume less amount of sugar sweetened beverages and fried meals, good amount of fruit and vegetables with high healthy eating index and better food label use.¹⁰⁻¹²

The concept of Health Literacy is based on people's access to health information but their capacity to use this knowledge effectively is more important.⁴ The skills and practices of teachers play an important role in the implementation of Health Literacy to the students.¹³ The teachers who are responsible for the transfer of health knowledge and implementation of the health related behaviors to the students, should have the sufficient Health Literacy level to have the school students learn basic health information and improve health concepts and skills.¹⁴

The purpose of this study is to determine the level of Health Literacy of teachers who work at the city center of Eskisehir and to evaluate the relation with eating behaviors and some of possible related variables.

METHODS

This cross-sectional research study was conducted between 1st of March and 28th of April 2017 with the primary, secondary and high school teachers at the city center of Eskisehir. Eskisehir is the center of Eskisehir Province settled in Central Anatolia Region of Turkey with a population of 844, 842. The city is one of the few industrialized cities of the Central Anatolia, and is ranked as 7th among the leading cities regarding the socioeconomic development.^{15,16} At the city center of Eskisehir there are 2791 teachers at 83 primary schools, 3039 students at 69 secondary schools, 3925 teachers at 57 high schools, making the total number as 9755 teachers.¹⁷

In this study the sample size was estimated as at least 369 teachers (with 50% sufficient health literacy prevalence, 5% margin of error at 95% confidence interval). Sample size calculation was based on estimating the sample size using a cluster sampling method and a design effect of 2 and also allowing a sample multiplier of 0.075, the sample size was estimated as 738 including 210 primary school teachers, 230 secondary school teachers and 297 high school teachers.

At the city center of Eskisehir each school was assumed as a cluster and the schools of the study group were selected in random method. The study group included 4 primary schools, 5 secondary schools and 6 high schools. So, the study group consists of 825 teachers who agreed to participate to the study while they were working at their schools at the time of the study (242 teachers from primary school, 267 teachers from secondary school, 316 teachers from high schools).

A questionnaire form was used for measurement which was based on a concept derived from the literature review.¹⁸⁻²⁰ The questions comprise the socio-demographic variables of teachers, potential factors associated with the health literacy, Turkish Health Literacy Scale (THLS) and The Three-Factor Eating Questionnaire.

The study was conducted in accordance with the regulations of National Education Directorate of Eskisehir and ethical clearance was obtained from the Ethics Review Committee of the Faculty of Education, University of Osmangazi, Eskisehir.

The directors of each selected school were called to make an appointment about performing the study and the selected schools were visited on approved date and times. The purpose of the survey was explained to participants. Verbal informed consent was obtained from each participant. The teachers were requested to complete the questionnaires. It took 10-15 minutes to complete the questionnaire for each of the participant.

Turkish Health Literacy Scale-32 (THLS-32) was used to evaluate the Health Literacy of the teachers. This 32-item scale was adapted from the conceptual model of the HLS-EU consortium by Okay et al in 2016. It has 5 point Likert type scaling of 32 questions. As the score of the scale increases, the level of Health Literacy of the individual also increases.¹⁸ The eating behaviors of the teachers were assessed by the Three-Factor Eating Questionnaire. The questionnaire was developed by Stunkard et al in 1985 and Karlsson et al. developed a reduced version of that. The revised Three-Factor Eating Questionnaire (TFEQ-R18) consists of 18 items and which comprises 3 different scales corresponding to cognitive restraint, emotional eating, and uncontrolled eating.²¹ Turkish version was validated by Kırac et al in 2015. It consists of 4 point Likert type 18 questions and measures 3 dimensions of eating behavior; cognitive

restraint, emotional eating, and uncontrolled eating. The scores may range between 0 and 100 points for each dimension. As higher the score, the eating patterns of that dimension appear more.¹⁹

The teachers categorized the socio-economic status of their families based on their own perceptions as 'bad', 'moderate' and 'good'.

The teachers who smoke at least one cigarette per day regularly, were considered as 'smoker'.²² Mann Whitney U and Kruskal Wallis tests, multi variant regression analysis and Spearman correlation analysis were performed for statistical analysis. It is considered significant if p value<0.05.

RESULTS

The study included 274 male (33.2%) and 551 females (66.8%). The mean age was 41.91±8.80 years ranging from 22 to 65 years. The number of married teachers was 682 (82.7%), 568 teachers (68.8%) were from moderate socio-economic status, 664 teachers (83%) had nuclear family.

The median of the general index of the THLS-32 was found to be as 32.81, ranging between 5.73 and 50.00. The association between the general health literacy index score of the THLS-32 and the socio-demographic characteristics of the participants were shown in below (Table 1).

Table 1: The association between the general health literacy index score of the THLS-32 and the socio-demographic characteristics of the participants.

Socio-demographics	n (%)	THLS-32 index score median (min.-max.)	Test value z/KW; p
School type			
Primary	242 (29.3)	32.3 (5.7-50.0)	1.074; 0.585
Secondary	267 (32.4)	32.8 (7.8-50.0)	
High school	316 (38.3)	32.8 (10.9-50.0)	
Gender			
Female	551 (66.8)	32.8 (5.7-50.0)	2.105; 0.035
Male	274 (33.2)	31.8 (7.8-50.0)	
Age group (years)			
≤34	183 (22.2)	32.8 (7.8-50.0)	0.721; 0.697
35-44	307 (37.2)	32.8 (13.5-50.0)	
≥45	335 (40.6)	32.3 (5.7-50.0)	
Marital status			
Married	682 (82.7)	32.8 (5.7-50.0)	0.130; 0.896
Not married	143 (17.3)	32.8 (15.1-50.0)	
Type of family			
Alone	62 (7.5)	33.3 (15.1-50.0)	0.073; 0.964
Nuclear family	734 (89.0)	32.8 (5.7-50.0)	
Extended family	29 (3.5)	32.8 (21.3-45.8)	
Income level			
High	136 (16.5)	33.3 (5.7-50.0)*	9.427; 0.009
Intermediate	568 (68.8)	32.8 (7.8-50.0)	
Low	121 (14.7)	30.7 (10.9-50.0)	
Tobacco use			
Smoker	269 (32.6)	31.8 (7.8-50.0)	1.903; 0.050
Non-smoker	556 (67.4)	32.8 (5.7-50.0)	
Body mass index			
<30	466 (56.5)	32.8 (5.7-50.0)	1.016; 0.310
≥30	359 (43.5)	31.8 (7.8-50.0)	
Chronical disease			
Yes	190 (23.0)	32.8 (5.7-50.0)	0.048; 0.961
No	635 (77.0)	32.8 (7.8-50.0)	
Total	825 (100.0)	32.8 (5.7-50.0)	

The study group included 364 (44.1%) teachers who had been working more than 20 years. Half of the participants

(50.5%) had a family member who worked as health care provider. The number of teachers who had attended a

course related with health care was 405 (49.1%) and who had heard the term Health Literacy previously was 343 (41.6%). The participants who had heard the Health Literacy as a term previously, who had attended any health education course and who had improved their

health knowledge by referring to health care workers had been found to obtain higher scores from the THLS-32. The association between the general health literacy index of THLS-32 and possible variables may be related with health literacy were shown in below (Table 2).

Table 2: The association between the general health literacy index of THLS-32 and possible variables may be related with health literacy.

Possible related factors	n (%)	THLS-32 index score median (min.-max.)	Test value z/KW; p
Duration of employment (years)			
≤9	156 (18.9)	32.8 (7.8-50.0)	0.569; 0.752
10-19	305 (37.0)	33.3 (12.5-50.0)	
≥20	364 (44.1)	32.3 (5.7-50.0)	
Existence of health profession in family			
Yes	417 (50.5)	32.8 (12.5-50.0)	1.674;
No	408 (49.5)	32.3 (5.7-50.0)	0.094
Being acquainted with health literacy term			
Yes	343 (41.6)	33.3 (15.6-50.0)	5.159;
No	482 (58.4)	31.8 (5.7-50.0)	0.000
Participate in any health education programme			
Yes	405 (49.1)	33.3 (10.9-50.0)	4.168;
No	420 (50.9)	31.8 (5.7-50.0)	0.000
Regular reader			
Yes	672 (81.5)	32.8 (10.9-50.0)	1.934;
No	153 (18.5)	30.7 (5.7-50.0)	0.050
Regular exercise			
Yes	279 (33.8)	33.3 (5.7-50.0)	2.801;
No	546 (66.2)	31.8 (7.8-50.0)	0.005
Knowledge acquisition by a health profession			
Yes	522 (63.3)	32.8 (5.7-50.0)	2.176;
No	303 (36.7)	31.8 (7.8-50.0)	0.030
Total	825 (100.0)	32.8 (5.7-50.0)	

Multivariate regression analysis of the Health Literacy related variables such as gender, income status, smoking habit, having heard the term Health Literacy, having

attended a health care related course, the source of the health knowledge, regular reading habit, regular physical activity behavior (Table 3).

Table 3: Multivariate regression analysis of the health literacy related variables.

Variables	F=7.448***; R ² =0.068	
	β (%95 GA)	p
Gender	0.022 (-0.013-0.058)	0.222
Income level	0.036 (0.006-0.065)	0.017
Tobacco use	0.033 (-0.068-0.003)	0.069
Regular exercise	0.038 (0.002-0.073)	0.036
Regular reader	0.013 (-0.031-0.056)	0.564
Being acquainted with health literacy term	0.073 (0.039-0.108)	0.000
Participate in any health education programme	0.052 (0.018-0.086)	0.003
Knowledge acquisition by an health profession	0.028 (-0.006-0.063)	0.106

The scores of median scores of participants were 33.3, 37.0 and 55.6 for the measures of the 'cognitive restraint', 'uncontrolled eating', and 'emotional eating' respectively at the Three factor eating questionnaire. The participants showed a negative poor correlation between the scores of 'emotional eating' scale and health literacy index of THLS-32 ($r=-0.149$; $p=0.000$), a negative poor correlation was also found between the 'uncontrolled eating' scale and health literacy index of THLS-32 ($r=-0.142$; $p=0.000$). However, 'cognitive restraint' eating scale was found to have a positive poor correlation with health literacy index of THLS-32 ($r=0.160$; $p=0.000$).

DISCUSSION

The importance of the Health Literacy has been increasing with regards to improvements of self assessed health by enhancing knowledge and participation in health care.²³ Low level of health literacy causes increased health care costs and burden of diseases, poor quality of health care, enhanced risk for poorer health outcomes. There is a common interaction between students and teachers so the level of Health Literacy of the teachers may have an impact on the level of Health Literacy of the students.²⁴

A decrease in Health Literacy could be expected by aging due to the impairment of working memory, processing speed, reasoning, and learning performance.^{25,26} The current study did not find a significant difference between the age groups regarding the Health Literacy. The similar finding was also reported by Tokuda et al.²⁷ On the other hand there are studies showing a decrease of Health Literacy level as the age increases.^{28,29} It could be speculated that the reason behind the different findings of these studies were caused by the disparities of the age and occupations.

As the socioeconomic status of individuals improves, it is expected to have a high level of Health Literacy due to the good perception of the health status, effective utilization of the health care system, better use of health education resources and access to relevant educational services and social support.^{27,30} Our findings revealed that the level of Health Literacy of participants with a good socio-economic status, was found to be higher compared to other groups. Some of the previous studies also exhibited that low income status had an association with the low level of the Health Literacy.^{29,31} However Tokuda et al reported no association between the income status of the family and the level of Health Literacy.²⁷ These results could be explained by the disparities of the countries in terms of developmental levels and the implication of different measurement scales. People who make healthier choices such as regular physical activity, non-smoking life style, healthy eating habits are expected to have higher levels of Health Literacy.¹¹ Our study showed that participants who exercised regularly had

high levels of Health Literacy. But no association was found between Health Literacy level and smoking. Literature review showed us that a positive association is present between regular exercise and the level of Health Literacy.^{11,32} Tokuda et al reported that no difference was found between smoking and non-smoking life styles for the level of Health Literacy.²⁷ In another study Shea et al found that smoking people had high level of Health Literacy.³³ Liu et al found that non-smoking people had higher level of Health Literacy.³² One possible explanation for these different findings could be the fact that the knowledge of negative health outcomes of the smoking did not cause behavioral changes. Therefore, people may have showed different smoking related behaviors. In addition, there is a lack of standardization in measurement tools which may also cause the disparities between the results of these studies.

People with low Health Literacy level have issues in management of diseases because they have communication problems to gain medical knowledge, do not have access to health care, do not comprehend the importance of the disease prevention, treatment plans and their ineffective communications put them at greater risk of adverse events. As a result poorer health outcomes are encountered such as increased prevalence of chronic diseases or progression of the current diseases.^{27,34,35} Low health Literacy should be evaluated as a risk factor for the development of chronic diseases and is more likely to be seen in a population of individuals with chronic diseases rather than in a healthy population. With regards to Health Literacy the current study did not find a significant difference between the participants with chronic diseases and without chronic diseases. Similar results were also showed previously.^{14,27} In addition the study of Health Literacy in Europe, which was conducted in eight countries reported that all the study countries except Netherlands had a correlation between the level of Health Literacy and the presence of chronic diseases.³

If a term has been heard previously, it is more likely to be curious, to do a research and to gain access to the information about the topic. Therefore, the individuals who have heard the term Health Literacy previously, are more likely to be interested in the topic and to have a high level of Health Literacy. Our study reported that the participants who had heard the term Health Literacy were found to have high level of Health Literacy.

Health education is very important as such one can develop the skills and knowledge to prevent diseases, to promote self-reported health and to maintain good health with a high level of Health Literacy.^{36,37} The present study showed that the teachers who attended a health related course, had a high level of Health Literacy. On the other hand Topuz et al did not find out a significant difference between the participants of a health education programme and participants who did not attend any

course.³⁸ Implication of different qualitative and quantitative measurement tools for health education could be the reason for the discrepancies between the results of these studies.

Interaction between the individuals may provide an access to health information therefore many people report that they require assistance from family or friends when dealing with health related issues such as understanding the symptoms of a disease, making a decision for treatment options and attempting lifestyle behavioral changes.³⁹ In this regard having a family member who works as a health care provider may have a positive impact on gaining access to required information and improving the level of Health Literacy. Our present study showed that no difference was found between the participants with a family member working as a health care provider and the ones without a family member working as a health care provider regarding the level of Health Literacy. Yilmazel et al found higher levels of Health Literacy of the participants who had a spouse working as a health care provider.¹⁴

It is well known that healthy eating habits are important for better health outcomes and good quality life style. Eating behaviors such as reading food labels, selection of healthier food choices, portion control, well established dietary plan have an association with the level of Health Literacy.^{12,40} As the level of Health Literacy increases, the levels of emotional and uncontrolled eating behaviors are expected to decrease and the level of cognitive restraint is expected to increase as a positive control indicator. Consistent with the literature on the association between the level of Health Literacy and eating behavior, our results showed that there is a positive correlation between the level of Health Literacy and the level of cognitive restraint where as there is a negative correlation between the level of Health Literacy and the emotional and uncontrolled eating behavior. It is also reported that people with sufficient level of Health Literacy have a positive attitude towards eating habits.^{10,11}

CONCLUSION

With regards to the level of Health Literacy, 52.1% of our study population were found to be above the median score of total. The level of Health Literacy was found to be high for the participants who had a good family income status, exercised regularly, had heard the term Health Literacy and had attended a health care related courses. Additionally, a positive poor correlation was found between the level of Health Literacy and the level of cognitive restraint and a negative poor correlation was found between the level of Health Literacy and the emotional and uncontrolled eating behavior.

The teachers have very important social network which enables them to be a role model for their students in terms of the level of Health Literacy and the eating habits. Their level of Health Literacy not only has an

impact on the eating habits of themselves but also on the eating habits of the students.

The literature based on the Health Literacy and eating habits in Turkey is very limited therefore future studies should be conducted. The teachers and the health care providers should collaborate on the topic more and they should be encouraged to participate in health related programmes.

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