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Health Literacy and Associated Factors in Medical Students

Tıp Fakültesi Öğrencilerinde Sağlık Okuryazarlığı ve İlişkili Faktörler

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ABSTRACT

Objective: *This study aims to determine the health literacy levels of medical students and to investigate the variables that may be associated with health literacy.*

Materials and Methods: *This cross-sectional study was carried out on 702 students studying in the first three years of the Necmettin Erbakan University, Faculty of Medicine. After obtaining ethical and written permission, the data of the study were collected between January and February 2023. For the research, a data collection form consisting of 53 questions was prepared by the researchers. The Turkish Health Literacy Scale-32 (TSOY-32) was used in the last part of the data collection form. SPSS 28.0 package was used for data entry and analysis. Statistical significance was accepted at p<0.05.*

Result: *Of the 702 students included in the study, 59.3% were female. The mean general index score of the participants on the TSOY-32 scale was 31.77 (26.04-36.45). According to the scores, 20.9% of the students had inadequate health literacy and 37.7% had problematic-limited health literacy. The TSOY-32 score of the first year students was significantly lower than that of the other two years. The TSOY-32 score was significantly higher than the other groups in those who reported that people with more income than their expenses most often use health care facilities for preventive services and in those who reported having heard about the concept of health literacy (p<0.05).*

Conclusion: *As a result of this research, it was found that more than half of the students had insufficient or problematic limited level of health literacy.*

ÖZET

Amaç: *Bu çalışmanın amacı tıp fakültesi öğrencilerinin sağlık okuryazarlığı düzeylerini belirlemek ve sağlık okuryazarlığı ile ilişkili olabilecek değişkenleri araştırmaktır.*

Gereç ve Yöntem: *Kesitsel tipte olan bu çalışma, Necmettin Erbakan Üniversitesi Tıp Fakültesi'nin ilk üç yılında öğrenim gören 702 öğrenci üzerinde gerçekleştirildi. Etik ve yazılı izin alındıktan sonra çalışmanın verileri Ocak-Şubat 2023 tarihleri arasında toplandı. Araştırma için araştırmacılar tarafından 53 sorudan oluşan bir veri toplama formu hazırlandı. Veri toplama formunun son bölümünde Türkiye Sağlık Okuryazarlığı Ölçeği-32 (TSOY-32) kullanıldı. Veri girişi ve analizinde SPSS 28.0 paketi kullanıldı. İstatistiksel anlamlılık p<0,05 olarak kabul edildi.*

Bulgular: *Araştırmaya dahil edilen 702 öğrencinin %59,3'ü kız idi. Katılımcıların TSOY-32 ölçeğindeki genel indeks puanı ortalaması 31,77 (26,04-36,45) olarak belirlendi. Puanlara göre öğrencilerin %20,9'unun yetersiz sağlık okuryazarlığına sahip olduğu, %37,7'sinin ise problemli-sınırlı sağlık okuryazarlığına sahip olduğu görüldü. Birinci sınıf öğrencilerinin TSOY-32 puanı diğer iki yıla göre anlamlı derecede düşüktü. Geliri giderinden fazla olan kişilerde, koruyucu hizmetler için en çok sağlık kurumlarını kullandığını belirtenlerde ve sağlık okuryazarlığı kavramını duyduğunu belirtenlerde TSOY-32 puanı diğer gruplara göre anlamlı derecede yüksekti (p<0,05).*

Sonuç: *Bu araştırma sonucunda öğrencilerin yarıdan fazlasının sağlık okuryazarlığının yetersiz veya sorunlu sınırlı düzeyde olduğu tespit edilmiştir.*

Keywords:
Health literacy
Medical faculty
Medical, student

Anahtar Kelimeler:
Sağlık okuryazarlığı
Tıp fakültesi
Tıp, öğrenci

INTRODUCTION

The World Health Organization (WHO) defines health literacy as "the level of access to, understanding of, and use of relevant sources of information to make decisions about health care, to protect, maintain, and improve health, and to improve quality of life" (1,2). According to the definition in the Dictionary of Health Promotion of the General Directorate of Primary Health Care Services of the Ministry of Health in our country, health literacy is the level of knowledge, skills and self-confidence that individuals need to change their lifestyles and conditions in order to improve their own health and public health (3). According to these definitions, health literacy is the totality of an individual's ability to access, understand, evaluate and use health-related information (4).

Health literacy is an important concept that enables people

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to make informed decisions about health-related issues. These skills are becoming increasingly important in an era where participation in health care is becoming more important, along with easy access to health information and increasing health-related resources (4,5). Health literacy is considered to be one of the most important issues in public health because of its impact on individuals' health outcomes (6).

Low levels of health literacy can have several negative consequences for individuals and societies (7). People with low health literacy may have difficulty accessing health-related information and services. As a result, some health problems, such as delayed diagnosis and treatment, may progress and become serious. They may make decisions based on incorrect and misleading health information. They may not take preventive health measures or have difficulty recognising the signs of illness. Because they do not fully understand the benefits and risks of health services, they may seek unnecessary tests and treatments, and may also be prone to unhealthy lifestyles that can increase the risk of chronic diseases such as obesity and diabetes mellitus. For these reasons, improving health literacy helps individuals make healthier decisions and use health services more effectively (8,9).

Student health literacy is a concept that aims to make the younger generation health conscious and knowledgeable. It involves developing students' ability to access, understand, evaluate and use health-related information. It provides students with basic skills in understanding and using health-related information, while helping them to adopt conscious and healthy lifestyles (10,11). Considering the importance of the concept in students, it can be assumed that health literacy is of particular importance for medical students, who are the health professionals of the future. Developing health literacy among medical students can help them become better doctors and health professionals. It also helps them to communicate more effectively with their patients and to make informed health decisions (10,11).

The aim of this study is to determine the health literacy levels of first, second and third year medical students and to examine the variables that may be associated with health literacy.

MATERIALS AND METHODS

Type of research and research permissions

Before this research, which was designed as a cross-sectional type; Written permission was obtained from the Ethics Committee of Necmettin Erbakan University, Faculty of Medicine, Non-Pharmaceutical and Medical Devices (Date: 06.01.2023, Decision Number: 2023/4119) and the Dean's Office of Necmettin Erbakan University Faculty of Medicine.

Participants

The population of the study consists of a total of 814 students in the first, second and third year of the Faculty of Medicine in the academic year 2022-2023. The sample size was not calculated for the research and the aim was to reach at least 80% (n=652) of the students. Research; Volunteered to participate in the study between 15 January and 15 February 2023 and gave verbal consent; The study was completed with a total of 702 (86%) students, 242 in the first year, 216 in the second year, 244 in the third year.

Data collection form

The data collection form prepared after the literature review in the research consists of 53 questions and three parts. In the first part, there are 13 questions about the socio-demographic characteristics of the participants. In the second part, there are 8 questions that may be related to the level of health literacy. In the third part, in order to determine the level of health literacy, the Turkish Health Literacy Scale-32 (TSOY-32), whose conceptual framework was developed by Okyay et al. The scale consists of 32 questions, the participants mark one of the answers as very easy/easy/difficult/very difficult/I have no idea according to the five-point Likert scale for the topics covered in each question. When scoring the scale, the calculated mean score is standardised to a range of 0-50 using the formula (mean-1) x (50/3). After this calculation, 0 indicates the lowest health literacy and 50 the highest health literacy. As a result of the obtained index, those with 0-25 points are classified as inadequate, those with >25-33 points as problematic-limited, those with >33-42 points as adequate, and those with >42-50 points as excellent health literacy. In the Turkish validity and reliability study of the TSOY-32 scale, it was found that the Cronbach alpha coefficient was 0.927, the factor loadings of each item were greater than 0.32, and they were grouped into a single factor (12). In this study, the calculated Cronbach alpha coefficient of the TSOY-32 scale was found to be 0.943.

Methods

After obtaining ethical approval and permission from the Dean's Office, data were collected through face-to-face interviews between student classes. All participants were informed about the study and students who agreed to participate were asked to complete the data collection forms. The data collection form was administered to the volunteer participants under observation and each form took an average of 15 minutes to complete.

Statistical analysis

Statistical analysis of the data was performed using IBM SPSS, version 28.0 (IBM Corp, Armonk, N.Y. USA). Visual (histograms and probability plots) and analytical (Kolmogrorov-Smirnov) methods were used to test the conformity of the data with the normal distribution. Numerical data were evaluated using arithmetic mean±standard deviation, median (1-3 quarters); frequency distributions and percentages were used to summarise categorical data. Categorical data with scale score; evaluated with Mann-Whitney U and Kruskal-Wallis H tests. Post-hoc Mann-Whitney U test with Bonferroni correction was performed for pairwise comparisons between groups with significant Kruskal-Wallis H test results. Correlations of non-normally distributed numerical variables were analysed using Spearman's correlation coefficient. Statistically, cases where p was less than 0.05 were considered significant.

RESULT

The mean age of the 702 students included in the study was 20.09±1.57 years. 59.3% (n=416) of the students were female. The socio-demographic characteristics of the students are shown in Table 1.

Table 1: Sociodemographic characteristics of medical students.

Features		n (%)
Gender	Female	416 (59.3)
	Male	286 (40.7)
Class	1st Class	242 (34.5)
	2. Class	216 (30.8)
	3rd Class	244 (34.8)
Family Type	Nuclear family	646 (92.0)
	Extended family	56 (8.0)
Income Status	Income less than expenses	56 (8.0)
	Income equal to expenses	401 (57.1)
	Income more than expenses	245 (34.9)
Longest residence	Village	29 (4.1)
	Country	156 (22.2)
	Provincial Centre	517 (73.6)
Mother's educational status	Middle school and below	234 (33.3)
	High school and above	468 (66.7)
Father's education	Middle school and below	122 (17.4)
	High school and above	580 (82.6)
Housing	At home with family	271 (38.6)
	Student residence	294 (41.9)
	Student house with a friend	85 (12.1)
	Living at home alone	52 (7.4)
Smoking status at any time in life	No	614 (87.5)
	Yes	88 (12.5)
Alcohol use at any time in life	No	632 (90.0)
	Yes	70 (10.0)
Presence of chronic disease	No	647 (92.2)
	Yes	55 (7.8)

When asked to rate their general state of health, 66.2% of the students rated their health as good, 31.9% as fair and 1.9% as poor. 40.9% of the participants reported that they exercised regularly (Table 2).

The mean body mass index (BMI), calculated from the height and weight of the students, was 22.41±3.50 kg/m2, and the mean number of books read per year was 6 (3-10). According to the results, 20.9% (n=147) of the students were inadequate, 37.7% (n=265) had limited problems, 27.5% (n=193) were adequate and 13.8% (n=97) were inadequate. (n=97) were found to have excellent health literacy.

Table 2: Some life characteristics of medical students.

Features		n (%)
How would you rate your overall health?	Good	465 (66.2)
	Middle	224 (31.9)
	Bad	13 (1.9)
Do you exercise regularly?	No	415 (59.1)
	Yes	287 (40.9)
Is there a doctor or health professional in your family?	No	470 (67.0)
	Yes	232 (33.0)
What is your most common reason for seeking health care?	Emergencies	474 (67.5)
	Follow-up of chronic diseases	65 (9.3)
	Preventive health services	163 (23.2)
Have you ever heard of the concept of health literacy?	No	358 (51.0)
	Yes	344 (49.0)
What resources do you usually use to access health information*?	The Internet	519 (73.9)
	Doctors and/or health professionals	397 (56.6)
	Television	42 (6.0)
	Medical books	254 (36.2)
	Newspaper, magazine	25 (3.6)

*Some respondents cited more than one source.

The comparison of TSOY-32 scores and socio-demographic characteristics of medical students is shown in Table 3. The TSOY-32 scores of female and male students were similar (p=0.415). A statistically significant difference was found between the TSOY-32 scores of students according to their class (p<0.001). It was found that this difference was due to the lower TSOY-32 scores of first year students compared to second and third year students (p<0.001; p<0.001 respectively). There was a significant difference between income status and TSOY-31 score (p<0.001). The difference was found to be due to the higher TSOY-32 scores of students who reported that their income was more than their expenses compared to those whose income was less than or equal to their expenses (p=0.002; p<0.001, respectively). There was a difference between the longest place of residence and the TSOY-32 scores (p=0.015). It was found that the difference was due to the higher scores of those who reported the province where they had lived the longest compared to those who reported the district (p=0.007). There was no difference between parental education level, place of residence, cigarette-alcohol consumption, presence of chronic diseases and TSOY-32 scores (p>0.05).

There was no difference between students' TSOY-32 scores according to their perception of their own health status as good - fair - poor (p=0.260). There was a difference between the most common reasons for visiting

Table 3: Comparison of students' TSOY-32 scores and socio-demographic characteristics.

Features		TSOY-32 Score Median (1-3 quarters)	p
Gender	Female	31.25 (26.04-35.93)	0.415*
	Male	32.29 (26.04-38.02)	
Class	1st Class	28.12 (22.39-33.33)	<0.001**
	2. Class	33.33 (29.16-39.58)	
	3rd Class	32.55 (28.12-38.02)	
Family Type	Nuclear family	31.77 (26.56-36.45)	0.097*
	Extended family	29.68 (22.52-36.84)	
Income Status	Income less than expenses	30.72 (25.13-33.33)	<0.001**
	Income equal to expenses	30.72 (25.52-35.67)	
	Income more than expenses	33.33 (28.12-38.54)	
Longest residence	Village	32.29 (26.82-42.70)	0.015**
	Country	30.20 (24.47-33.85)	
	Provincial Centre	31.77 (26.56-36.97)	
Mother's educational status	Middle school and below	32.03 (27.47-36.45)	0.603*
	High school and above	31.77 (25.52-36.45)	
Father's education	Middle school and below	31.25 (26.95-34.89)	0.347*
	High school and above	31.77 (26.04-36.45)	
Housing	At home with family	32.29 (26.56-36.97)	0.266**
	Student residence	30.72 (25.00-35.93)	
	Student house with a friend	32.29 (26.30-38.02)	
	Living at home alone	32.29 (27.60-38.02)	
Smoking status at any time in life	No	31.77 (26.56-36.45)	0.111*
	Yes	29.16 (25.00-34.24)	
Alcohol use at any time in life	No	31.77 (26.04-36.32)	0.130*
	Yes	32.81 (27.60-40.23)	
Presence of chronic disease	No	31.77 (26.04-36.45)	0.532*
	Yes	31.77 (27.60-38.54)	

*Mann-Whitney U test
**Kruskal Wallis H test

health facilities and the TSOY-32 score (p<0.001). The difference was found to be due to the fact that the median TSOY-32 score (33.33) of those who reported that they most often visited health facilities for preventive services was higher than that of those who reported that they visited for emergencies (31.25) and chronic disease follow-up (30.72) (p<0.001); p=0.010). The TSOY-32 score of those who reported having heard of the concept of health literacy was significantly higher than that of those who had not (p<0.001). The TSOY-32 scores of doctors and/or health professionals who reported receiving health information from medical books were significantly higher than those who reported not receiving information from these sources (p<0.001; p=0.019, respectively) (Table 4). No correlation was found between students' age, BMI, number of books read per year and their TSOY-32 scores (r=0.128, p=0.001; r=0.024, p=0.0519; r=0.001, p=0.990).

DISCUSSION

The aim of this study was to determine the level of health literacy among preclerkship students in the first three years of medical school, and to examine variables that may be associated with health literacy. More than half of the 702 medical students included in the study have an inadequate or problematic level of health literacy, according to their scores on the TSOY-32 scale. In a study using the TSOY-32 scale on students of the Faculty of Medicine at another university in 2020, it was found that 10.2% of students had inadequate health literacy and 30.0% had a problematic-limited level of health literacy (9). Also in our country, it was found that 27.2% of the 400 people included in the study for the development of the TSOY-32 scale in 2016 had insufficient health literacy and 42.2% had a problematic-limited level of health literacy (12). In the European Health Literacy Survey, which included Austria, Bulgaria, Germany, Greece, Ireland, the Netherlands, Poland and Spain, at least 1 in 10 (12%) had insufficient health literacy and approximately 1 in 2 (47%) had a problematic-limited level of health literacy. Of these eight countries, only 1.8% of the sample in the Netherlands had insufficient health literacy, while in Bulgaria this rate was found to be 26.9% (13). In these studies conducted in our country, similar to our study, it can be said that the

Table 4: Comparison of students' TSOY-32 scores with some life characteristics.

Features		TSOY-32 Score Median (1-3 quarters)	p
How would you rate your overall health?	Good	31.77 (26.04-36.45)	0.260**
	Middle	32.03 (26.56-36.45)	
	Bad	29.68 (17.70-33.33)	
Do you exercise regularly?	No	32.25 (26.04-35.93)	0.173*
	Yes	32.29 (26.56-38.02)	
Is there a doctor or health professional in your family?	No	31.77 (26.04-36.06)	0.470*
	Yes	31.77 (26.56-36.97)	
What is your most common reason for seeking health care?	Emergencies	31.25 (26.04-34.50)	<0.001**
	Follow-up of chronic diseases	30.72 (21.87-38.80)	
	Preventive health services	33.33 (28.12-41.14)	
Have you ever heard of the concept of health literacy?	No	30.72 (25.00-34.37)	<0.001*
	Yes	32.29 (27.60-38.02)	
Types of resources used to access health information.			
Internet	No	31.77 (27.60-38.02)	0.152*
	Yes	31.77 (26.04-35.93)	
Doctors and/or health professionals	No	30.20 (23.43-34.89)	<0.001*
	Yes	32.29 (28.12-37.50)	
Television	No	31.77 (26.04-36.45)	0.171*
	Yes	30.20 (26.04-33.33)	
Medical books	No	31.25 (25.52-35.41)	0.019*
	Yes	32.29 (27.60-38.02)	
Newspaper, magazine	No	31.77 (26.04-36.45)	0.889*
	Yes	31.77 (29.68-33.59)	

*Mann-Whitney U test
**Kruskal Wallis H test

percentage of insufficient or problematic limited health literacy is similar. However, the differences in the level of inadequate or problematic-limited health literacy in studies conducted in countries other than Turkey may be due to differences in the level of development of the countries, health policies, and socio-cultural structures of the participants included in the study. In addition, it can be assumed that the use of different scales to determine the level of health literacy.

In this study, the TSOY-32 scores of male and female students were similar. In some studies conducted with students studying in the field of health, similar to this study, it was found that there was no difference between gender and health literacy (12,14). In some community-based studies in the international and national literature, it has been found that women's health literacy scores are significantly higher than men's (15-18). The difference in some population-based studies that found a significant difference between gender and health literacy may be due to the inclusion of people with different levels of education. The fact that there was no significant difference between health literacy scores and gender in some studies that included people with the same level of education, as in our study, seems to support this idea.

Similar to the literature, in this study, as the grade level of the students increases, their health literacy scores also increase (9,19). The first professional group that comes to mind for the health education of society is generally doctors. Therefore, it is an expected finding that as the number of classes of medical students increases, their education in the field of health, their ability to access, understand and evaluate health-related information and resources increases, and with this increase, their health literacy scores increase.

In this study, the TSOY-32 scores of those whose income exceeds their expenses are significantly higher than those whose income is less than or equal to their expenses. In the literature, similar to this study, it has been found that the health literacy levels of individuals with high income levels are sufficient and excellent, while those with low income levels are found to be insufficient, problematic and limited (20-22). Health literacy has recently been seen as one of the important links between socioeconomic status and health (5,23-25). In this link; as socioeconomic status improves, it is thought that reasons such as better perception of health status, easier access to health services and health education may be effective.

In the study, there was no significant difference between the prevalence of chronic disease in students and TSOY-32. It is stated that the level of health literacy plays a key

role in the prevention and management of chronic diseases (26). It is stated that people with low health literacy experience communication problems in accessing medical information, are unable to access health services and therefore have problems in managing their illnesses. For these reasons, the incidence of chronic diseases is higher in people with low health literacy (4). In the study, it was predicted that the inability to find a difference between chronic diseases and health literacy was due to the fact that the study population consisted of young people with medical education. The lack of difference between chronic diseases and health literacy in similar studies conducted with students studying in the field of health supports our prediction (9,27).

In this study, it was found that the TSOY-32 score of those who reported that they most often visited health facilities for preventive services was higher than that of those who reported that they visited for emergencies and follow-up of chronic diseases. Studies have shown that people with low health literacy are less likely to use chronic disease management and preventive health services. For these reasons, low health literacy has been reported to be an important factor in increasing disease mortality and health service costs (13,16,28).

In the study, similar to the literature, those who said they had heard of the concept of health literacy had a higher TSOY-32 score than those who had not (29,30). The higher scores of students who had heard of health literacy may be due to the fact that they are more likely to be interested in the topic, to research it, and to obtain information about it. It is also possible that as the medical student class progresses, the likelihood of being educated about health literacy and obtaining information about the term may have an effect on this finding.

The TSOY-32 scores of students who reported receiving health information from doctors and/or health professionals and from medical books were significantly higher than those who reported not receiving information from these sources. Getting accurate information from reliable sources is very important for health. Getting accurate and reliable information from the right source can influence health-related decision making. It is expected and desired that medical students receive reliable information.

CONCLUSION

As a result of this research, conducted with 702 students studying in the first three years of the Faculty of Medicine, it was found that more than half of the students had an inadequate or problematic level of health literacy. It was found that the level of health literacy increased with class level and income level. It was found that the health literacy of those who most frequently used health facilities for preventive services was higher than that of those who used them for emergencies and chronic disease management. It was found that those who reported having heard of the concept of health literacy and those who reported receiving health information from doctors and/or health professionals and medical books had higher health literacy.

Health literacy is an important factor in increasing people's health-related knowledge, skills and positive behaviours. Medical students are in a position to play a leading role in the field of health and can play an important role in providing access to health information for society. For this reason, it is necessary to improve the health literacy of those receiving health education. By investigating the variables that may be important in the health literacy level of students, training and studies specifically for these groups should be strengthened.

LIMITATIONS

Our study had several limitations. Due to the cross-sectional design of the study, the long-term causal relationships between different factors related to health literacy could not be assessed. In addition, only students in the first three years of medical school were included in the study. The inclusion of students from different universities and faculties is an important limitation. Despite the above limitations, we believe that this study will make a significant contribution to the literature by identifying the factors associated with the level of health literacy of medical students and guiding future research in this area.

Conflict of Interest: No conflict of interest was declared by the authors.
Ethics: This study was approved by Non-Pharmaceutical and Medical Device Ethics Committee of Necmettin Erbakan University Faculty of Medicine with decision number 2023/4119 dated 06.01.2023.
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