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Health Literacy Level of First-year University Students: A Foundation University Study

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ABSTRACT

Objective: This study was designed to determine the health literacy level of first-year university students enrolled in different educational programs.

Materials and Methods: The sample of this descriptive cross-sectional study comprised 570 freshmen studying at a private foundation university in Turkey. The study data were collected with an online survey created using Google Forms software (Google LLC, Mountain View, CA, USA) that included a sociodemographic data form and the Adult Health Literacy Scale developed by Sezer and Kadioglu. Statistical analysis was performed using the IBM SPSS Statistics for Windows, Version 20.0 software. Descriptive statistics were calculated, and the Mann-Whitney U test, the Kruskal-Wallis test, the Bonferroni correction, and Spearman's correlation test were used to examine the data.

Results: The mean health literacy score was 11.49±2.39. Female students and students who were studying a health-related subject at university, who graduated from a health services vocational high school, and who had mothers with a low education level demonstrated higher literacy levels.

Conclusion: The results indicated that the health literacy of freshman university students of various education programs was at a medium level. Additional elective health courses added to the curriculum of university departments outside the health field as well as additional related studies and projects could provide substantial individual and community benefit.

Keywords: Adult Health Literacy Scale, health literacy, university student

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INTRODUCTION

The concept of health literacy encompasses several factors related to the ability to access, understand, and apply information related to healthcare, and has a broad effect at the individual and community level (1). Individuals must have the means to make sound decisions in order to reach public health objectives; a lack of competency and control over factors that affect one's health prohibits the achievement of these goals (2). In a study conducted in European Union member countries, the health literacy level of approximately 12% of the participants was reported as insufficient, and that of 35% of the participants was considered problematic (3). A Turkish government study of 6228 households titled "Health literacy levels and associated factors in Turkey" revealed that the health literacy level of 7 of 10 participants was inadequate or limited (4). Bozkurt and Demirci (5) examined the health literacy level of individuals aged 65 and over and reported that the health literacy level of 85.1% of the participants was problematic and inadequate. Poor health literacy can lead to difficulty understanding information and messages about health, less use of preventive health services, problems accessing health services, more use of emergency services, poorer health overall and increased incidence of chronic diseases, and a higher rate of hospitalization (6).

Health literacy refers to the idea that individuals have the basic knowledge required to maintain and improve their health and to access and use health-related services effectively to treat conditions as needed (7). Functional, interactive, and critical health literacy dimensions have been defined that demonstrate the effect on the use of healthcare services and decisions about health. Functional health literacy refers to basic reading and writing skills (reading and understanding prescriptions, brochures, and drug information, etc.), interactive health literacy includes cognitive and social skills (participating in screening programs, using information when health status changes, working with healthcare providers, etc.), and critical health literacy refers to the ability to analyze relevant health information and the use of cognitive and social skills in the decision-making stage (8, 9).

To improve the health literacy of individuals and communities of all sizes, individuals need to assume an active role in improving their health level, there should be engagement through social movements promoting a healthy lifestyle, media (particularly social media) must be used effectively, and community leaders and authorities must support the

necessary arrangements for individuals to comply (supporting initiatives for early diagnosis and treatment, funding, developing policies, coordinating cross-sectoral activity, supervising and taking the lead) (10). It has been emphasized that efforts to increase health literacy are important in order to fully achieve the social, economic, and environmental objectives of the United Nations 2030 Agenda for Sustainable Development (11).

Since many lifestyle behaviors evolve during early adulthood, it is valuable to determine and improve the health literacy level of university students (12). Previous studies evaluating the health literacy level of university students in Turkey have indicated that improvement was necessary (12–14). University students are typically a healthy group with a high education level, and they are a primary target age group for the encouragement and support of healthy behaviors (15). In addition, university students can play a key role in their homes, social spaces, and on social media (16). Therefore, a clear understanding of the health literacy levels of university students is important. This study was designed to determine the current health literacy of a population of students and to provide findings that could guide training and other measures to improve the general level of health literacy.

MATERIALS and METHODS

This descriptive cross-sectional study was conducted between October and November 2019 with freshmen students of a private foundation university.

Research Population and Sample
The research population included 662 freshmen who were beginning a 2-year vocational or 4-year undergraduate education at the university where the research was conducted. Sample selection was not performed, in order to include the entire university population. The study sample was composed of 570 students (86.1% of the population) who were enrolled in a course and volunteered to participate in the study.

Data Collection
The data were collected online using Google Forms survey software (Google LLC, Mountain View, CA, USA). Students were informed about the research in an in-person presentation. The online link used to collect data was provided once written confirmation of voluntary consent was obtained. An online format was preferred as it saves time and prevents errors that may occur during data entry performed by a researcher. A sociodemographic data form developed by the researchers and the Adult Health Literacy Scale (AHLS) were used to collect data.

Data Collection Tools
Sociodemographic Data Form: The form used was created by the researchers and includes 11 questions about the demographic characteristics of the students, such as department of study, age, gender, type of high school attended, parents' educational status, and presence of chronic disease.

Adult Health Literacy Scale: The Turkish AHLS developed by Sezer and Kadioglu (9) includes 22 items related to health knowledge and drug use and 1 question that includes a figure about

Table 1. Sociodemographic characteristics of the students (n=570)

Variables	n	%
Age (years) Mean±SD, Min–Max	19.74±4.65	18–42
University faculty/school		
Health services professional	412	72.3
Other vocational program	85	14.9
Faculty of economics, administrative and social sciences	54	9.5
Faculty of health sciences	19	3.3
Gender		
Male	207	36.3
Female	363	63.7
High school graduation		
Health services vocational school	231	40.5
Other high schools (science, social, art, etc.)	339	59.5
Place of residence		
Urban	539	94.6
Rural	31	5.4
Education level of mother		
Primary school	225	39.5
Secondary school	229	40.2
University	116	20.4
Education level of father		
Primary school	144	25.3
Secondary school	242	42.5
University	184	32.3
Level of income		
Income < expenses	89	15.6
Income = expenses	328	57.5
Income > expenses	153	26.8
Chronic disease		
Yes	37	6.5
No	533	93.5

SD: Standard deviation; Min: Minimum; Max: Maximum

the location of organs in the body. This scale was selected for the study because it is designed for individuals between the ages of 18–65 and it is appropriate for university students. Ten of the questions are yes/no questions, while 3 are fill-in-the-blank items, 8 are multiple choice, and 2 are matching questions. Each question type is scored separately. For the yes/no questions, positive statements (15, 17, 19, 20, 21) are scored with 1 point, and negative statements (16, 18, 22) are scored as 0. For fill-in-the-blank questions, 1 point is given for a correct answer and 0 points are given for an incorrect answer. One point is given for ≥2 correct responses to the multiple-choice questions, and responses with no correct answers or both correct and incorrect answers are scored as 0. For the matching questions, 1 point is given for more than 2 correct matches and 0 points are awarded

Table 2. Analysis of some sociodemographic characteristics and mean scale scores (n=570)

Characteristics	Median (Min–Max)	Mean rank	Statistics	p	Bonferroni
Gender			U=28582.00	<0.001	–
Male	11 (4–17)	242.08			
Female	12 (4–17)	310.26			
Faculty/school			KW=31.07	<0.001	1>2; 3>2
Health services professional	12 (6–17)[1]	304.80			
Other vocational program	10 (4–16)[2]	196.73			
Faculty of economics, administrative and social sciences	12 (6–17)[3]	277.44			
Faculty of health sciences	12 (8–15)[4]	286.94			
High school graduation			U=29932.00	<0.001	–
Health services vocational school	12 (6–17)	325.42			
Other high schools (science, social, art, etc.)	11 (4–17)	258.29			
Education level of mother			KW=8.24	<0.05	1>3
Primary school	12 (4–17)[1]	305.61			
Secondary school	11 (4–17)[2]	282.45			
University	11 (4–16)[3]	252.52			
Education level of father			KW=0.84	0.658	–
Primary school	11.50 (6–17)	290.37			
Secondary school	12 (4–17)	289.48			
University	11.50 (4–16)	276.45			
Chronic disease			U=8719.00	0.234	–
Yes	12 (8–16)	316.35			
No	11 (4–17)	283.36			

Min: Minimum; Max: Maximum; KW: Kruskal-Wallis H test; U: Mann-Whitney U test

to other responses. The item related to organs of the body is scored with 1 point for ≥2 correct answers, and 0 points for <2 correct answers. The possible total score is 0–23; higher scores indicate greater health literacy. The Cronbach alpha coefficient of the scale reported by the authors was 0.77, and the test-retest reliability coefficient was 0.87 (9). The Cronbach alpha coefficient for this study sample was 0.74.

Data Analysis
IBM SPSS Statistics for Windows, Version 20.0 software (IBM Corp., Armonk, NY, USA) was used to analyze the data. Descriptive statistics (number, percentage, and arithmetic mean) were used to describe the sociodemographic data. A p value of <0.05 was considered statistically significant. The Mann-Whitney U test and the Kruskal-Wallis test were used to analyze and compare the health literacy level. The Bonferroni correction and Spearman's rank correlation were used in post hoc analysis to assess specific differences.

RESULTS

The demographic characteristics of the participants are given in Table 1. The students ranged in age 18–42 years, with a mean of 19.74±4.65 years. In the group, 63.7% of the participants were female and 98.6% were single. Health services vocational school graduates comprised 40.5%, 94.6% lived in the city center, and the majority of their mothers (40.2%) and fathers (42.5%) were

secondary school graduates. Most of the students (93.5%) did not have a chronic disease (Table 1).

The median AHLS score was 12; the mean score was 11.49±2.39 (range: 4–17). Comparison of the students' AHLS scores with sociodemographic characteristics revealed some distinctions. A statistically significant difference was found between the AHLS score and gender (U=28582.00; p<0.001), faculty/school of study (KW=31.07; p<0.001), the type of high school (U=29932.00; p<0.001), and the mother's education level (KW=8.24; p<0.05). The health literacy level of female students was greater than that of male students, and in health services vocational high school graduates. In the advanced analysis conducted to reveal whether the differences resulted from the variable of university faculty/school or the mother's education level, the health literacy level of those studying in a vocational program was lower compared with that of those who studied in the university health services professional school and the faculty of economics and administrative sciences. In addition, notably, the health literacy of those whose mothers were primary school graduates or less was higher than that of those whose mothers had graduated from university. No statistically significant difference was found between the presence of chronic diseases, the education level of the father, and the AHLS scores (p>0.05) (Table 2). Finally, no statistically significant relationship was found in the relationship between the students' mean age and their AHLS score (p>0.05).

DISCUSSION

The health literacy score of the students who participated in this study (11.49±2.39) was of a medium level (Table 2). In a similar study conducted with health and social sciences students that used the same scale, the mean health literacy score was 16.9±3.2 (12). It was also reported in another study that evaluated the health literacy level of university students using the AHLS that the mean health literacy score was 14.31±2.60 (13). The mean AHLS mean scores of our study participants was lower than that of the participants in the other 2 studies (12, 13).

Health literacy is a multidimensional concept influenced by many variables, which likely had an influence on these varied results. The concept of health literacy involves cognitive and social skills that include the ability to access and use information to protect and improve one's health condition. Health literacy should be promoted at every stage of education. The results of this study may be, at least in part, a reflection of insufficient coverage of subjects in school curricula that would contribute to development of health literacy.

It has been noted in the literature that there is a relationship between gender and health literacy (4, 15, 17–20). Rababah et al. (18), Sukys et al. (19), and Vozikis et al. (15) all found in their studies of university students that the health literacy score of male students was lower than that of female students. The Turkish Ministry of Health General Directorate of Health Promotion (4), Dashti et al. (17), and Zhang et al. (20), however, found that male students had a higher level of health literacy. Sezer and Kadioglu (9) and Evans et al. (21) did not find a significant difference in the mean health literacy score based on gender. Our findings indicated that female students had a higher health literacy score. This gender effect may be partly attributed to the fact that women typically have the caretaking role in the household in the traditional family structure of Turkey. In addition, although the health literacy scores of today's young people were not high, greater access to information through printed sources and the Internet may have contributed to these results.

It has been reported that education level and study in departments related to health have an impact on health literacy (17–19, 21–23). Rababah et al. (18), Evans et al. (21), Britt et al. (22), and Yang et al. (23) found that the health literacy level of students in health-related departments was higher than that of those studying in other departments. Similarly, it has been observed that as education level increases, health literacy also increases (4, 17, 21). In our study, the level of health literacy of the graduates of a vocational high school for health-related careers was higher than that of the graduates of other high schools. Correspondingly, the health literacy level of those who study at the university health services school and the faculty of economics, administrative and social sciences, which includes the psychology department, was found to be higher than those who studied at other vocational schools, such as those offering computer programming and construction technology programs. Study of health-related fields would appear to create awareness and add to health literacy; however, even these students demonstrated only a moderate level of health literacy.

A positive correlation has been observed between health literacy and the presence of disease (13). This is likely due to the fact that those who experience disease go to health institutions more frequently than other individuals and become more informed about disease, drugs, and treatment methods. There may also be a positive relationship between health literacy and adherence to treatment. The health literacy scores of participants who have a chronic disease and who take their medication regularly were higher than those of other participants (24). Yılmaz and Tiraki (25) reported that individuals with a high health literacy level manage chronic diseases more effectively. In our study, there was no significant difference in health literacy based on the presence of a chronic disease. Malatyali and Bicer (14) and Copurlar et al. (26) had results similar to those of our research. They found no significant difference between chronic disease and health literacy level. The varied findings in the literature may be due to differences in the research sample. For instance, in our study, only 6.5% had a chronic disease.

In a study of nursing students, Ayaz-Alkaya and Terzi (24) found that the education level of the parents did not affect the level of health literacy. However, it has also been found that in some circumstances, students whose parents had a lower level of education felt unsupported and unable to adequately make decisions about healthcare (27). Our study findings indicated that the health literacy level of those whose mother's education was primary school or below was higher than that of those whose mothers graduated from university, and that the education level of the father did not significantly affect the level of health literacy. The high health literacy of individuals whose mothers had a low level of formal education may be attributed to the fact that these individuals often need to do more research on health-related issues and seek the correct information themselves. As the education level of the mother increases, it may be that mothers provide more guidance to their children on health-related issues and the children do not feel the need to do research or read on these issues.

In our study, no significant relationship was found between the mean student age and their AHLS score (p>0.05). This is consistent with some other studies that did not find a relationship between age and health literacy (28, 29), however, a positive correlation was found in a study conducted of health and social science students (30). The different results may be related to the fact that while all of these students were freshmen, age was not considered.

The literature also provides varied reports on the relationship between health literacy and income level. While some studies have argued that health literacy was not affected by income level (9, 31), others have asserted that those with higher income levels had higher levels of health literacy (15, 32). A study of European Union countries indicated that the level of health literacy was lower in individuals with low education and income levels, minority groups, immigrants, those with a low level of general health and long-term health problems, and the elderly (3). In our study, no significant difference was found between students' family income level and health literacy scores. This may be due to the similar income level among the participants.

Limitations of this study include recognition that some of the participants stated that they had difficulty understanding and answering the scale items containing health-related terminology and therefore

withdrew. In addition, some students forgot to press the submit button after they filled in the data collection tools, which resulted in data loss. Although the sample represents the target population well (response rate: 86.1%), it is small. Thus, larger-scale and multicenter studies are needed for a more comprehensive evaluation.

In conclusion, the health literacy of the university students enrolled in different educational programs in this study was of a medium level. The health literacy level of female students, those who studied in a field related to health, and those who had graduated from a health profession vocational high school was significantly higher than that of the others. In addition, we found that the education level of the mother significantly affected the health literacy level of the student. This study assessed students who had recently started their university education (two-year degree/undergraduate degree) in both health-related and other fields. The results could be a valuable and original contribution to the literature. These and other data suggest that elective courses related to health added to the university curricula of all spheres could be very valuable, and that male students in particular should be encouraged to participate. Courses and projects that include cooperation between male and female students in both health-related and other fields could yield great benefit. The ability to adequately understand and navigate health needs has a broad impact on both individuals and society. Greater health literacy would provide numerous benefits.

Ethics Committee Approval: The İstanbul Medipol University Non-Invasive Clinical Research Ethics Committee granted approval for this study (date: 13.10.2019, number: 10840098-604.01.01-E.56391).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

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