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Assessing health literacy, the factors affecting it and their relation to some health behaviors among adults.

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Abstract

Introduction: Health literacy is an important factor in promotion of health and patient empowerment. This study aims at determining the health literacy levels and influencing factors in 20 to 64 years old individuals, registered to Family Health Centers in Edirne city center.

Materials and methods: The study sample was comprised of 285 individuals, who were aged between 20 and 64 years and registered to 17 out of 20 Family Health Centers in Edirne city center. The participants completed a survey on their socio-demographic data as well as an Adult Health Literacy Measure including 23 questions. Descriptive statistics, Spearman correlation analysis, Mann-Whitney U, and Kruskall-Wallis H tests were used in analysing the results. A multivariate linear regression model was used to examine the independent effects of different predictors on health literacy.

Results: Participants were 143 females (50.2%) and 142 males (49.8%). Their average age was 39.42 years. Their mean of Adult Health Literacy Measure scores was 13.26 where female participants had higher mean scores. The mean score for health literacy increased with an increase in education level, number of books read in a year, number of days reading a newspaper weekly and monthly household income. The findings of regression analysis indicated that male gender had 0.975 unit of negative effect on health literacy and decreased health literacy level. Being married and having university education had 1.079 and 1.445 units of positive effect respectively on health literacy thereby increasing its level. An increase of 1 unit in the number of days for reading a newspaper weekly led to a 0.241 unit of increase in health literacy.

Conclusion: The mean score for health literacy which was calculated on a scale of 23, was 13.26 and it should be increased. The analysis indicated that education was the most important predictor.

Keywords: Health literacy, Primary care physicians, Health education.

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Introduction

As technology advances at an unprecedented pace in the new millennium, the concept of literacy goes through a change accordingly and the difference between the definitions of literacy and literate gradually widens. While being literate now refers to the ability to read and write the letters on a paper, the content of literacy which refers to the ability to understand and interpret, widens every day by getting new names with new terms (media literacy, health literacy etc.) [1]. The expectations of modern health systems from the people using health care gradually increase. Due to the increased individual responsibility in health care, people might be required to undertake new roles with respect to taking responsibility for their health, understanding information and making health decisions for themselves and others. The basis for all those expectations is the health literacy skills of people [2]. The concept of health literacy was first used in an article by Simond in 1974 in an article titled "Health Education as Social Policy" [3]. The concept of health literacy was studied in many articles in the end of 1990s as awareness increased and many scales were developed for assessing it [4]. In 1992, the researchers of "National Adult Literacy Survey" made in the USA defined health-related reading and numeracy skills as the functional health literacy. Those skills included abilities such as: reading consent forms, drug labels, brochures and information on health services; understanding the written and verbal information given by health personnel; acting in line with directives and necessary procedures such as medication and appointment schedule [5].

In 2013, World Health Organization (WHO) defined health literacy as follows: "Health literacy is linked to literacy and entails people's knowledge, motivation and competences to access, understand, appraise and apply health information in order to make judgements and take decisions in everyday life concerning health care, disease prevention and health promotion to maintain or improve quality of life during the life course" [1]. The Dictionary of Health Promotion, published by the General Directorate of Primary Health Care of the Ministry of Health in Turkey defines health literacy as "the cognitive and social skills that determines individuals' motivation and

competencies to access, understand and use information in order to promote and sustain good health" [6]. Three levels were conceptualized in health literacy based on the increased difficulty and skills. Functional literacy meant the basic skills in reading/writing and the skills in understanding health-related materials [7]. The individuals at this level can read and understand the information on the use of health services (prescriptions, prospectus etc.) [1]. Interactive literacy referred to the presence of developed cognitive and social skills. Those skills play an active role in understanding health-related messages and health activities. Critical literacy referred to the most advanced level of cognitive and social skills. People at this level can analyze health information, see the social and economic aspects of health, and improve their personal and social capacities [7].

People with low levels of health literacy had worse health outcomes than those with higher levels of health literacy. They had less information on their diseases, less personal care, poor self-management skills, low screening levels, low levels of medication adherence, and higher hospitalization rates. Moreover, the benefits of higher health literacy included higher rates of preventive care, early diagnosis of diseases, and the skills for managing chronic diseases and accessing the most suitable health care [8]. Particularly female patients with lower levels of education wanted to have more information on their treatments. In fact, they often complained that their physicians did not make comprehensible explanations although their need for information was met [9]. The behaviors of seeking health information can change the impact of health literacy on health outcomes. It was shown that those behaviors were related to health information. People with less education were inclined to trust their families and friends for health information, while those with higher education were inclined to consult more sources such as health professionals, internet and newspapers [10].

Various studies showed that medical information was often beyond the reading levels of patients. For example, one study found that patients did not really understand terms such as "colon", "screening test", and "blood in the stool". Another study reported one out of four women did not know what a mammogram was [11,12]. One study found a relation between having higher level of health literacy and being a non-smoker and reported that most of the participants with adequate health literacy exercised at least once a week [13]. In simple terms, informing people about risk factors such as smoking, nutrition, alcohol, physical activity and weight was not often sufficient enough to achieve lifestyle changes. In fact, it seems that the ability to achieve lifestyle changes required shared decision making and good communication, which were important to developing a sense of trust and partnerships between the patient and physician. People without adequate health literacy did not have the capacity to manage their own health, change their lifestyle or prevent the progress of their chronic diseases [14].

Patients with inadequate health literacy often feel shame and decreased worth, and they are embarrassed to ask their physicians to explain or repeat instructions or other relevant information. The behaviors that might suggest inadequate health literacy include asking help from auxiliary health personnel, bringing along someone who can read and keep appointments, making excuses (e.g., "I forgot my glasses"), noncompliance with medication, poor adherence to instructions (e.g., elevating the head of the bed for reflux), delaying decision making (e.g., I will read it when I get home), watching other people (mimicking behavior) [15]. Our study aimed at evaluating the individuals that applied to primary care in Edirne city center by using "Adult Health Literacy Measure (AHLM)", finding their mean health literacy scores and assessing health literacy by some sociodemographic data.

Materials and Methods

This study was designed in a descriptive and cross-sectional pattern with the purpose of determining the relation between the health literacy levels and health-related quality of life (HRQOL) of male and female individuals, who were aged between 20 and 64 years and enrolled to 17 Family Health Centers in Edirne city center. Out of 20 Family Health Centers only 17 of them accepted to take part in the study. First, the approval of the Ethics Council and the approval of the Edirne Provincial Public Health Directorate were received. Then, as of 01.03.2016, interviews were made with 285 enrollees including 143 females and 142 males, who were volunteers and consented to the study, and who were enrolled to 17 Family Health Centers in Edirne city center.

Face-to-face interviews made with the participants to get them complete the surveys at their respective Family Medicine Centers. Our study did not collect the identification data of patients. The participants were informed verbally, and their consents were taken. This process of information and consent was implemented with the help of a text in the introduction of survey, explaining the study and asking for participation, and the volunteers that agreed to participate were included in the study. The study data was collected by using a survey prepared by the researcher. The survey covered the sociodemographic data on participants as well as an AHLM with 23 questions assessing their health literacy.

Adult health literacy measure (AHLM)

The reliability measure developed and tested by Sezer et al. [16] contained a total of 22 items on health information and drug use and 1 image on knowing the places of organs in the body for determining health literacy level among adults. The scale scores vary between 0 and 23. The score increases as health literacy level increases.

Statistical analysis

The statistical analysis of the data collected for the study was made by using SPSS 19 (Statistical Package for the Social Sciences, version 19, series no: 10240642). The study used non-parametric tests because it was found that AHLM data were not suitable for normal distribution. Statistical method

was descriptive statistics. Spearman correlation analysis, Mann-Whitney U, and Kruskall–Wallis H tests were used. Statistical significance level was considered significant when $p<0.05$ and insignificant when $p \geq 0.05$. A multivariate linear regression model was used to examine the independent effects of different predictors on health literacy.

Results

Descriptive statistics

The study was conducted on 285 people including 143 females (50.2%) and 142 males (49.8%), who were between the ages of 20 and 64 and enrolled to Family Health Centers in Edirne city center and their sampling was calculated. Participants' average age was 39.42 ± 11.21 (minimum 20, maximum 64), and the median value was 37. According to their marital status; 216 of them were (75.8%) married, 52 were (18.2%) single, 10 were (3.5%) separated/divorced, and 7 were (%2.5) widow/ers.

According to their children; 211 of them (74%) had children and 74 (26%) had no children. According to their number of children; 91 of them (31.9%) had 1 child, 94 (33%) had 2 children, 20 (7%) had 3 children, and 6 (2.1%) had 4 children. The average number of people living in a household was 3.36 ± 1.09 (minimum 1, maximum 6). 93 participants (32.6%) lived in rental houses and 192 (67.4%) lived in their own houses. According to their housing specifications; 211 of them (74%) lived in apartment flats, 5 (1.8%) lived in slums, and 69 (24.2%) lived in detached houses.

According to their educational status; 38 of them were elementary school graduates (13.4%), 42 were primary/ secondary school graduates (14.7%), 89 were high school graduates (31.2%), 42 were vocational school graduates (14.7%), 68 had bachelor's degree (23.9%), and 6 had master's degree (2.1%). According to their occupational status; 26 participants were (9.1%) retired, 44 were (15.4%) housewives, 46 were (16.2%) workers, 106 were (37.2%) civil servants, 16 were (5.6%) students, and 47 were (16.5%) self-employed. Their average monthly household income was 3022.28 ± 17.

The average number of books read by participants in a year was 4.16 ± 6.08 (minimum 0, maximum 30). Participants read newspapers on 2.99 ± 2.71 days (minimum 0, maximum 7) in a week on average. The mean body mass index (BMI) of participants was 25.98 ± 3.90 kg/m^2 (minimum 17.9 kg/m^2, maximum 45 kg/m^2). According to their smoking status; 147 participants (51.6%) did not smoke and had never smoked, 41 participants (14.4%) quitted smoking, and 97 participants (34%) smoked. 41 participants that quitted smoking used to smoke 10.27 ± 6.16 (minimum 1, maximum 30) packages a year on average. 97 smokers smoked 15.4 ± 7.27 (minimum 2, maximum 40) cigarettes a day on average.

According to alcohol consumption; 52 participants (18.2%) consumed alcohol while 233 (81.8%) did not. In terms of alcohol consumption amount, the group of risky drinkers was defined as having alcohol 7 times a week or more than 3 drinks at a time for females and having alcohol 14 times week or more than 4 drinks at a time for males. When the 52 participants that consumed alcohol were asked about the amount, 9 of them (3.2%) were found to be in the group of risky drinkers. According to their physical exercise choices; 203 participants (71.2%) preferred walking, 12 (4.2%) preferred swimming, 25 (8.8%) preferred team sports, 11 (3.9%) preferred exercising in a gym, and 34 (11.9%) did not prefer any exercises. 13 participants (4.6%) followed a diet prescribed by a dietician and 48 (16.8%) dieted based on their own knowledge. 224 participants (78.6%) did not follow a specific diet.

In response to the question "In general, how do you first access health information?" 36 participants said television (12.6%), 65 said internet (22.8%), 181 said physician (63.5%), 1 said nurse (0.4%), and 2 said newspapers/periodicals (0.7%). According to the AHLM scores of the participants, the mean score was 13.26 ± 3.34 (minimum 2, maximum 22).

Health literacy comparisons

The comparison of participants' gender and AHLM scores indicated a statistically significant relation ($Z=-2.351$; $p=0.019$). Mean AHLM scores were 13.66 and 12.87 for women and men respectively. We found no statistically significant difference between the AHLM scores and the marital status, having children, number of people living in the household or age. There was a statistically significant relation between participants' housing specifications and AHLM scores ($x^2=8.471$; $p=0.014$). Mean AHLM scores were 13.53 for those living in apartment flats, 12.57 for those living in detached houses, and 11.60 for those living in slums. There was a statistically significant relation between participants' educational status and AHLM scores ($x^2=23.922$; $p<0.0001$). Mean AHLM scores were 12.13 for elementary school graduates, 12.14 for primary/secondary school graduates, 13.09 for high school graduates, 14.17 for vocational school graduates, 13.93 for university graduates, and 17.00 for those with a master's degree. There was a statistically significant relation between participants' occupational status and AHLM scores ($x^2=24{,}158$; $p<0{,}0001$). Mean AHLM scores by professions were: 14.58 for the retired, 13.50 for housewives, 12.22 for workers, 14.04 for civil servants, 12.75 for students, and 11.77 for the self-employed.

There was a significant relation between health literacy and the number of books read in a year ($r=0.315$; $p<0.0001$). As the number of books read in a year increased, mean health literacy scores increased, too. There was a significant relation between health literacy and the number of days in a week for reading a newspaper ($r=0.211$; $p<0.0001$). As the number of days in a week for reading a newspaper increased, health literacy mean scores increased as well. There was a significant relation between health literacy and the total monthly household income ($r=0.217$; $p=0.025$). As the total monthly household income increased, mean health literacy scores increased, too. We found no significant relation between health literacy and the factors of having chronic diseases, BMI scores, smoking status, alcohol consumption, diet status, and most frequent

causes for applying to a healthcare facility. We found a statistically significant relation between participants' AHLM scores and the first point of accessing health information (x^2=13.151; p=0.011). In terms of the first point of accessing health information, the mean health literacy scores were 11.97 for those preferring TV, 12.50 for those preferring newspapers/ periodicals, 14.03 for those preferring internet, and 13.28 for those preferring physicians.

Multiple regression analysis with health literacy as dependent variable

Table 1 indicates the results of the multiple regression analysis where health literacy was the dependent variable. The findings of regression analysis indicated that the linear combination of the values for gender, being married, education and number of days in a week for reading newspapers significantly predicted health literacy (R square=0.120; F=9.505; p<0.001). It was seen that male gender had 0.975 unit of negative effect on health literacy and decreased health literacy level. Being married and having university education had 1.079 and 1.445 units of positive effect respectively on health literacy thereby increasing its level. 1 unit of increase in the number of days in a week for reading a newspaper led to a 0.241 unit of increase in health literacy.

Table 1. *Results of the multiple regression analysis for health literacy*

Independent variables	B	Standard error	β	t	p
Gender	-0.975	0.378	-0.146	-2.582	0.010
Being married	1.079	0.448	0.138	2.411	0.017
University education (bachelor' or master's degree)	1.445	0.401	0.213	3.607	<0.001
Number of days in a week for reading newspapers	0.241	0.072	0.195	3.361	0.001
R^2=0.120; F=9.505; p<0.001					

Discussion

Individuals can maintain, protect and promote their health only by understanding, assessing and acting on basic health information. In this way, the health level of the community can be improved, and the health care services can be used accurately [17]. Our study examined the scores of health literacy measure among participants aged 20-64 in Edirne city center, along with the factors affecting those scores and their correlation with some health behaviors. The mean AHLM score of participants was 13.26. This mean score might seem low considering that the calculation was made on a scale of 23. The study made by Tanrıöver et al. [4] throughout Turkey by using the European Health Literacy Measure reported that the rate of inadequate health literacy was 24.5%. Examining the factors affecting health literacy, we found that there was a statistically significant relation between participants' gender and AHLM scores. The females had higher mean AHLM scores. The relation between participants' health literacy and occupations was statistically strong. The highest mean health literacy scores belonged to the retired people and civil servants while self-employed people had the lowest mean health literacy scores. There was a positive correlation between health literacy and the total monthly household income. While participants living in apartment flats had the highest mean health literacy scores, those living in slums had the lowest mean scores. There was a significant relation between education level and health literacy as well. Mean health literacy scores increased as the education level increased. In the light of all those indicators, we found that health literacy decreased as the socio-economic level decreased, and this finding is consistent with literature [4]. Health literacy skills are closely related to basic literacy skills. Our study supports literature in this aspect.

Our study did not find a relation between health literacy and the factors of age, marital status, BMI, smoking, alcohol consumption, diet and exercise. In general, health literacy is lower among elderly people, black race, women, single people and those with lower education and income level [18]. In an EU study, health literacy level was higher among young adults with high income levels, those with highest social status and education level and women [4]. The study made by Özdemir et al. [5] in primary care found that health literacy level was lower among women, those with low income, primary school graduated and elderly people. In one study found that lower health literacy was associated with higher nicotine dependence, less negative smoking outcome expectancies, and less knowledge about smoking hazards, and people with lower health literacy had less success in smoking cessation [19]. According to the study by Gazmararian et al. [20], individuals with adequate health literacy were more likely to have never smoked and to abstain from alcohol compared to those with inadequate health literacy. Same study reported that sedentary lifestyle was higher in those people. Although there was no difference between health literacy and the BMI or waist circumference, individuals with inadequate health literacy had higher rates of being classified as overweight.

Our study did not find a significant relation between health literacy and BMI. Not classifying participants by BMI is considered to be a limitation of our study. We found no relation between health literacy and smoking status. We think that one of the factors causing this situation is that, contrary to western societies, smoking incidence in our country increases in parallel with education level [21]. When we examined the responses to the matching question, which was "Match the following screening tests with correct letters according to their performance times and write them in parenthesis", 177 participants (62.1%) received "0" point and 108 participants (37.9%) received "1" point. Participants' lack of information regarding early screening tests stood out. In addition, we found that the application rate to health facilities for preventive care was 9.5%, and in this sense there was a parallelism. This rate was 10.7% in the study by Tanrıöver et al. [4]. In our study, the first point of accessing health information was 12.6% by TV, 22.8% by internet and 63.5% by physician. In the study by

Tanrıöver et al. [4], this rate was 10.9% by TV, 19.9% by internet, and 57.7% by physicians. It is apparent that the increased use of internet will be beneficial but it is important to seek and find the right information. Since health professionals, who are the first and most accurate sources of information in health-related matters, have limited time, individuals resort to sources with questionable credibility, such as internet, TV and newspapers, for health education. Those unreliable sources might lead people to make wrong decisions about their health. People need an adequate level of health literacy to be able to make the right health decisions [22].

Conclusion

Individuals can maintain, protect and promote their health only by understanding, assessing and acting on basic health information. When the factors affecting health literacy are examined, it is seen that health literacy level decreases in parallel with decreased socioeconomic and education levels. Family physicians should consider and determine the health literacy levels of the individuals with low education and socioeconomic levels, and strive to improve their health literacy levels. Plainer and explanatory language should be used for communicating with those individuals, and more time should be allocated for their meetings.

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