JETR

JOURNAL OF
EXERCISE THERAPY
AND REHABILITATION

J Exerc Ther Rehabil. 2022;9(3):205-213. DOI: 10.15437/jetr.989563

ORIGINAL ARTICLE

Investigation of health literacy by gender in individuals receiving physiotherapy and rehabilitation services

Ayşenur GÖKŞEN[1], Zafer ERDEN[2], Gizem İrem KINIKLI[2]

Purpose: Health literacy is important for the science of physiotherapy, which includes treatment methods based on understanding and practice. To increase the health literacy level of patients, individual characteristics should be considered. The aim of this study is to investigate the health literacy level of individuals who received physiotherapy and rehabilitation services and identify the role of gender on the health literacy level.
Methods: The health literacy levels of patients who received physiotherapy and rehabilitation services due to an orthopedic injury or musculoskeletal problem were examined. Health literacy was evaluated with the Turkey Health Literacy Questionnaire (THLQ). Age, body mass index, disease duration, number of physiotherapy sessions, physiotherapy history and education level were questioned. Whether the data obtained differed according to gender was analysed with appropriate statistical methods.
Results: Average health literacy overall score found as 34.02±8.56. The mean health literacy score of females was found to be significantly better than that of males ($p<0.01$). No difference was found between genders in terms of excellent health literacy status ($p=0.008$).
Conclusion: The health literacy level of patients who received physiotherapy and rehabilitation services was found to be sufficient. The health literacy level of females was found to be higher than males. Since our study reveals the health literacy level of patients receiving physiotherapy, it is also expected to contribute to future studies on public health.
Keywords: Health literacy, Physiotherapy, Public health.

Fizyoterapi ve rehabilitasyon hizmeti alan bireylerde sağlık okur yazarlığının cinsiyete göre incelenmesi

Amaç: Sağlık okuryazarlığı, anlama ve uygulamaya dayalı tedavi yöntemleri içeren fizyoterapi bilimi için önemli bir konudur. Hastaların sağlık okur yazarlığı seviyelerini artırmak için bireysel özelliklerin dikkate alınması gerekmektedir. Bu çalışmanın amacı, fizyoterapi ve rehabilitasyon hizmeti alan bireylerin sağlık okuryazarlık düzeylerini ve cinsiyetin sağlık okuryazarlığı üzerindeki rolünü araştırmaktır.
Yöntem: Ortopedik bir yaralanma veya kas iskelet sistemi problemi sebebi ile fizyoterapi ve rehabilitasyon hizmeti almış olan hastaların sağlık okur yazarlığı düzeyleri incelendi. Bireylerin, Sağlık okuryazarlığı Türkiye Sağlık Okuryazarlığı Anketi (SOYA) ile değerlendirildi. Yaş, vücut kitle indeksi, hastalık süresi, fizyoterapi seans sayısı ve fizyoterapi geçmişi sorgulandı. Elde edilen verilerin cinsiyete göre farklılık gösterip göstermediği uygun istatistiksel yöntemlerle analiz edildi.
Bulgular: Bireylerin sağlık okuryazarlığı ortalama puanı 34,02±8,56 olarak bulundu. Kadınların sağlık okuryazarlığının erkeklerden anlamlı olarak daha iyi olduğu bulundu ($p<0,01$). Mükemmel sağlık okuryazarlığı durumu açısından ise cinsiyetler arasında bir fark olmadığı bulundu ($p=0,008$).
Sonuç: Fizyoterapi ve rehabilitasyon hizmeti alan hastaların sağlık okuryazarlığı düzeyinin yeterli olduğu bulundu. Kadınların sağlık okuryazarlığı düzeyinin erkeklere göre daha fazla olduğu bulundu. Bu çalışma fizyoterapi ve rehabilitasyon hizmeti alan hastaların sağlık okuryazarlık düzeyini ortaya koyarken, halk sağlığı ile ilgili gelecek çalışmalara da katkı sağlayacaktır.
Anahtar kelimeler: Sağlık okuryazarlığı, Fizyoterapi, Halk sağlığı.

1: Tarsus University, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, Mersin, Türkiye
2: Hacettepe University, Faculty of Physical Therapy and Rehabilitation, Department of Musculoskeletal Rehabilitation, Ankara, Türkiye.
Corresponding Author: Ayşenur Gökşen, E-mail: aysenur.karaman@windowslive.com
ORCID IDs (order of authors): 0000-0003-2273-5908; 0000-0003-0641-9956; 0000-0003-1013-6393
Received: September 1, 2021. Accepted: November 24, 2021.

Health literacy is an increasingly important issue in terms of protecting and promoting public health. Although it is always an important issue for individuals to know how to protect their health level against diseases and injuries, to access correct information about their health status and to take responsibility, the importance of this issue has increased with the COVID 19 pandemic. Health literacy is the assessment of a range of abilities such as understanding the health conditions of individuals, the treatment programs, health system and applying the treatments given. Assessments about health literacy include skills such as reading, understanding the text, finding words in the text, understanding food labels.[1]

Having deficient health literacy may cause misunderstandings about health, disruption of treatment, and important consequences that pose a risk to the health of individual. Deficient health literacy also affects the issues of increase in treatment costs and not using the resources allocated to health effectively.[2] There are studies on health literacy that especially questioning the use of drugs and the ability to read food labels.[3] Health literacy is also important for the science of physiotherapy which includes treatment methods based on cognitive process, behavioral adaptation, and practice. Unless there is a contraindication during physiotherapy and rehabilitation practices, disease-specific exercise training is given, correct body biomechanics and respiratory techniques are taught. During physiotherapy practices, patients try to understand and follow the commands given by the physiotherapist. Patients are in a learning process during treatment sessions. Also, patients are trained on conservative treatment approaches such as exercise, cold-hot modality applications, taping, and using orthoses, which should be practiced at home. The patient is asked to correctly apply the given education at home. Therefore, physiotherapy and rehabilitation applications require patients to work more with their healthcare professionals and focus more on treatment compared to other treatment methods.

The correct understanding of the given exercises and other practices significantly increase the success of the treatment. We think that understanding the purposes of physiotherapy and ensuring continuity in the implementation of given exercises and protective strategies are associated with high awareness level and high health literacy level. Therefore, it is important to develop strategies to increase the health literacy of patients during physiotherapy training. We believe that grading the patients according to their individual characteristics would increase the success of the trainings. Also, grading demographic variables, attitudes, and behaviors related to health literacy ensures that individual characteristics are considered in the trainings. In addition, patient-specific treatments could be carried out. Although there is a definite opinion in the literature that age and education level affect health literacy, studies comparing health literacy between females and male have various results.[4-7] We believe that the results of present study would provide a basis for future studies about educations which increase the level of health literacy.

The aim of this study was to investigate the health literacy level of individuals who received physiotherapy and rehabilitation service and identify the role of gender on the health literacy level. We hypothesized that there would be no difference in the health literacy levels between Turkish women and men.

METHODS

Patients who received physiotherapy and rehabilitation treatment in Hacettepe University, Physiotherapy and Rehabilitation Department, Orthopedic Rehabilitation Unit were allocated to the study. The population of study comprises male and female patients with acute or chronic orthopedic injuries and musculoskeletal disorders. Table 1 present information about the patients. The study was approved by the Hacettepe University Clinical Research Ethics Committee (GO16/282). Individuals who voluntarily agreed to participate in the study and signed the informed consent form were included in the study. The Declaration of Helsinki was followed throughout the study.

Inclusion criteria of the study were determined as follows: being 18 to 65 years old,

having at least one week physiotherapy and rehabilitation program or given an exercise program, having no mental handicap, no vision problem, being able to read and write, being Turkish native speaker.

Criteria for exclusion of volunteers from the study were as follows: individuals who cannot perceive and execute commands properly, inability to complete the assessments, individuals with a known or concomitant diagnosis of dementia, reluctance to participate in the study, having a disease at a level that may prevent the individual from understanding and completing the questionnaire, and answering the questions in the survey incompletely.

Disease durations of the individuals included in the study were recorded. Symptoms lasting longer than 6 weeks were recorded as chronic. Age, education level, body mass index, physiotherapy history and number of physiotherapy sessions were questioned. Previously received physiotherapy was questioned yes or no answers recorded. According to the answers of the patients, Physiotherapy sessions was recorded as follows: home program, 10 sessions or less, 30 sessions, regular treatment every year and received treatment more than twice a year. Patients' health literacy level was evaluated by THL-Q which evaluates heath literacy in four sections under the name of prevention of health processes, health promotion, health service delivery and information processing with 47 questions. Turkey Health Literacy Questionnaire (THL-Q) is a questionnaire that created from the translation of the European Health Literacy Survey (HLS-EU). HLS-EU is a survey that developed by the HLS-EU Consortium within the scope of the European Health Literacy Project 2009-2012.[8] Health literacy were evaluated with THL-Q which is valid and reliable.[9] It is a survey that measures the level of health literacy in processing processes. This questionnaire, consisting of 47 questions, is based on disease prevention, health promotion, healthcare delivery and information. It is based on the ability to read a food label, understand it and perceive the content of the food in line with some questions. In addition, patients' demographic information was collected.

In the current study, face to face interview technique was used during data collection. The questionnaire forms were properly filled in by the interviewers by reading them on paper.

Each of the 47 questions in the THL-Q was scored between 1 and 4 (1=very difficult, 2=difficult, 3=easy, 4=very easy). The overall score from the THL-Q was standardized as indicated in the formula (Index= (mean-1) x (50/3)), with 0 showing the lowest health literacy, 50 the highest health literacy on a scale from 0 to 50. The calculated personal index was evaluated in four categories according to the obtained index values.[3] According to the scoring system of the survey means: (0-25) insufficient points, (>25-33) problematic-limited health literacy, (>33-42) adequate health literacy, (>42-50) excellent health literacy.

Statistical analysis

SPSS (version 26) and JASP (version 0.16.1) were used for statistical analysis. Quantitative data was summarized as mean and standard deviation. Comparisons of two independent groups for quantitative variables were analyzed by the independent samples t-test, and Welch's t-test was used when variance homogeneity was not achieved. Brown-Forsythe analysis of variance was reported, since more than two independent group comparisons did not provide variance homogeneity. Relationships between quantitative variables were calculated with the Pearson correlation coefficient. Variables within categorical variables were analyzed with the Chi-square test. The significance level was accepted as 0.05.

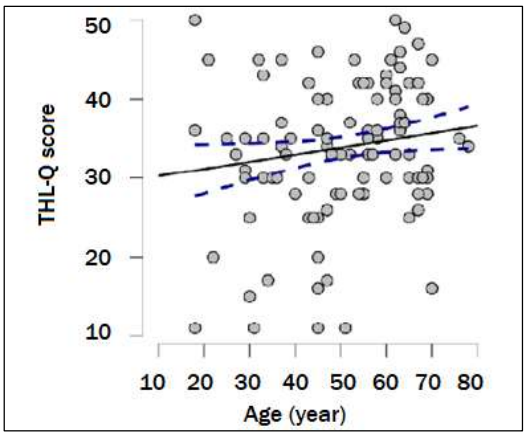

Figure 1. Scatter plot of the Turkey Health Literacy Questionnaire (THL-Q) score and age.

RESULTS

One hundred sixty-nine individuals (95 females and 74 males) participated in this study. The demographic data of the individuals participating in the study is shown in Table 1. The average age of the patients was 51.75±14.69 years; average height was 165.72±9.38 cm; average weight was 72.68±13.79 kg; body mass index was 32.89±11.93 kg/m^2. When the male and female genders were compared in the study group, statistically significant differences were found in terms of height, weight, and BMI, excluding age ($p=0.227$, $p<0.001$, $p<0.001$ and $p=0.046$, respectively). Although the relationship between age and THL-Q score was statistically significant, when the calculated Pearson correlation coefficient ($r=0.152$, $p=0.048$) was evaluated in terms of effect size, it is seen that there is a negligible low ($r<0.20$) relationship. (Graph 1. Scatter plot of THE-Q Score and Age).

When comparisons were made in terms of THL-Q scores, the mean of the group with a high level of education (37.4±6.94) was found to be statistically significantly higher than the mean of the group with a low level of education (29.69±8.54) (Table 2). When the size of this difference is examined, it is seen that Cohen's d statistic is -1.001 (that is, a very large difference). When the mean of THL-Q was compared according to their previous physiotherapy treatment status, the mean of the group that had previously received physiotherapy treatment (37.13±7.45) was found to be statistically significantly higher than the mean of the group that had not previously received physiotherapy treatment before (33.72±8.18). When the size of this difference is examined, it is seen that Cohen's d statistic is -0.435 (that is, a moderate difference) (see in table 3). When the mean of THL-Q was compared according to gender groups, the mean of the female group (35.76±8.4) was found to be statistically significantly higher than the mean of the male group (31.8±8.32). When the size of this difference is examined, it is seen that Cohen's d statistic is -0.475 (that is, a moderate difference), (Table 2). When the comparisons are made according to the duration of the disease and the duration of receiving the physiotherapy treatment, it is seen that the differences between the group averages are not statistically significant ($p=0.805$ and $p=0.095$, respectively) (Table 2 and Figure 2).

When the relationships between the distributions of THL-Q score classifications in gender groups were examined, a statistically significant relationship was found ($p=0.003$). When the source of the differences is examined, there is no significant difference between the distribution of women (8 people, 8.4%) and men (8 people, 10.8%) at the level of insufficient health literacy (0-25 points). Similarly, the difference between female (18 people, 18.9%) and men (9 people, 12.2%) distributions is not significant at the level of perfect health literacy (43-50 points). However, at the level of limited health literacy (25-33 points), men are more likely than women (26 people, 12 versus 35.1%) 12.6%, and at the level of adequate health literacy (33-42 points), on the contrary, women are more likely than men (57 people, %). 31 people versus 60 (41.9%) is a statistically significant majority (Table 3).

DISCUSSION

In this study, which was planned to investigate the health literacy levels of patients who received physiotherapy and rehabilitation services and the role of gender in the level of health literacy, it was found that most of the patients participating in the study had sufficient health literacy level. According to the results of our study, the average health literacy score (34 points-adequate health literacy) is higher than the Turkey average (30.4 points-limited health literacy).[3] The number of studies emphasizing the importance of health literacy in rehabilitation is limited in the literature.[10] In most of the studies in the literature, it has been observed that most of the society has "insufficient" and "problematic" health literacy.[3, 11-13] In a study examining the health literacy of patients admitted to tertiary healthcare facilities, it was found that the majority of patients had insufficient and problematic / limited health literacy.[13] In a study on patients with musculoskeletal problems by Aytar et al., it was found that the patients had "insufficient" health literacy.[11] Unlike in the literature, the reason why the level of health literacy was found to be

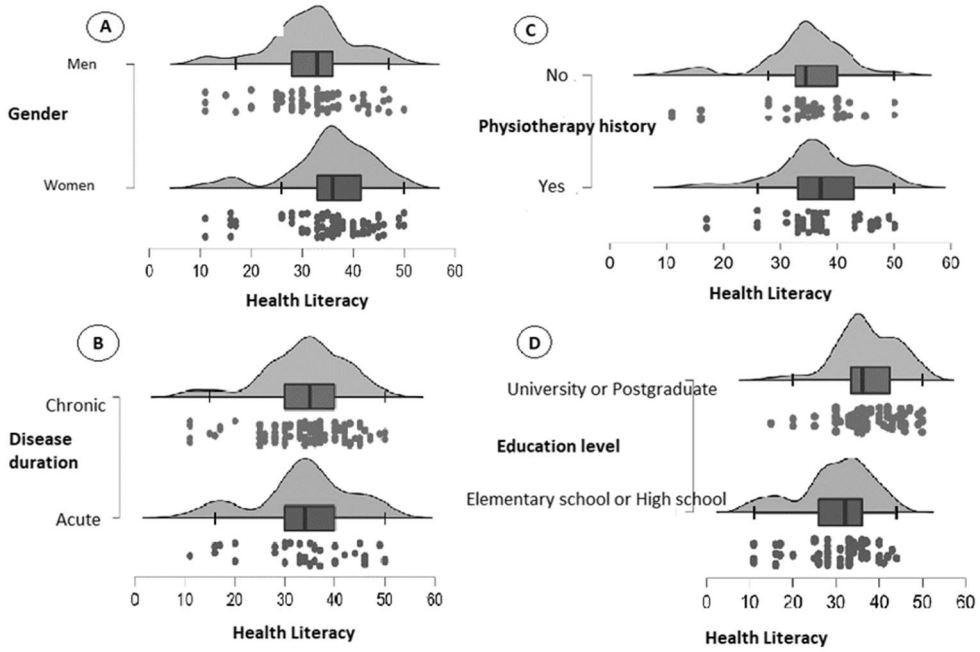

Figure 2. Scatter plot of the Turkey Health Literacy Questionnaire (THL-Q) score.

Table 1. Comparison of genders in terms of demographic characteristics.

	Female (n=95) Mean±SD	Male (n =74) Mean±SD	t	p	Effect size
Age (year)	53.0±15.7	50.3±12.7	1.21†	0.227	0.188
Height (cm)	159.7±5.6	173.4±7.4	-13.15*	<0.001	-2.073
Body weight (kg)	69.6±12.4	76.6±14.6	-3.29†	<0.001	-0.521
Body mass index (kg/m^2)	31.3±10.6	35.0±13.3	-2.01†	0.046	-0.312

†: t: test, *: Welch t test, SD: Standard Deviation

Table 2. Group comparisons in terms of the Turkey Health Literacy Questionnaire (THL-Q) score.

		THL-Q score Mean±SD	(t/F)	p	Effect size
Education	High school or below (n=74)	29.69±8.54	-6.473‡	<0.001	-1.004[a]
	University or postgraduate (n=95)	37.4±6.94			
Disease Duration	Acute (n=43)	33.74±9.67	-0.247‡	0.805	-0.044[a]
	Chronic (n=126)	34.12±8.2			
Physiotherapy history	Yes (n=53)	37.13±7.45	2.309‡	0.023	0.435[a]
	No (n=60)	33.72±8.18			
Number of physiotherapy sessions	1 month (n=42)	33.93±10.8	2.425†	0.095	0.038[b]
	Less than 3 weeks (n=51)	35.26±5.72			
	Regularly every year (at least once) (n=20)	38.4±5.01			
Gender	Female (n=95)	35.76±8.4	3.055‡	0.003	0.474[a]
	Male (n=74)	31.8±8.32			

a: Coden's d, b: Partial Eta Square, ‡ t: test, †: Brown-Forsythe ANOVA, SD: Standard Deviation.

Table 3. Comparison of health literacy results in terms of gender.

	Female	Male	χ^2	p*
	Mean±SD	Mean±SD		
Poor health literacy (0-25)	8±8.4[a]	8±10.8[a]	13.438	0.003
Limited health literacy (25-33)	12±12.6[a]	26±35.1[b]		
Adequate health literacy (33-42)	57±60[a]	31±41.9[b]		
Excellent health literacy (43-50)	18±18.9[a]	9±12.2[a]		

*Chi-square test. * Exact p value. Each superscript letter denotes a subset of gender categories whose column proportions do not differ significantly from each other at the .05 level, SD: Standard Deviation.

sufficient in our study may be that the patients came to the physical therapy clinic for a long time. According to studies, having a long-term physical therapy service and involving with a disease constantly has a positive effect on the state of health awareness.[10,14] Patients who receive physiotherapy and rehabilitation services are in closer contact with healthcare professionals for a longer time than other treatment services. Patients can easily access the necessary information about their health by the physiotherapist during the treatment sessions which take an average of 40 minutes. In this respect, physiotherapists are more accessible to the patient than other healthcare professionals. In terms of increasing health literacy, it is very important for health professional to be accessible and to inform patients about their illness. Since many treatment approaches included in physiotherapy and rehabilitation treatment require active participation of the patient and an active learning process, the health literacy level of the patients is an important issue that increases the effectiveness of the physiotherapy treatment.

Studies in the literature have found a relationship between disease duration and health literacy.[1, 13, 15] The study of Güven found that those with chronic diseases have much higher health literacy than those without chronic diseases.[16] Having a chronic disease requires more responsibility for the patient. Unlike this study, having an acute or chronic disease do not affect the health literacy level according to results of our study. There are also studies in the literature that support our results on disease duration.[1, 17] According to the results of Gazzarian et al.'s study, it has been shown that health literacy is independently associated with disease knowledge. This study, which examines the relationship between health literacy and disease knowledge in patients with chronic diseases, supports our results.[18, 19] In a study, which included individuals with different chronic diseases, it was reported that 36% of the patients had insufficient health literacy. It has been reported that most of the patients with sufficient health literacy do not know important information about their chronic diseases. The individuals constituting the population of our study consisted of patients receiving treatment in the same clinic. Physiotherapists share the purpose of the treatment program, the effects of the techniques and agents they apply with their patients, and the use of technological opportunities to better teach the given exercises positively affects the level of health literacy. Results may be different for patients treated in different clinics. Therefore, it is important to conduct this study in a larger universe.

To increase the level of health literacy, physiotherapists should share aim of treatment program, effects of the techniques and agents which they apply with their patients. Technological opportunities may be used to teach the given exercises better. It may be useable to teach exercises not only through the picture booklet, but also by giving both verbal and auditory stimulation repeatedly, considering the motor learning process and learning-physiology, and teaching the given exercises by applying them under a physiotherapist supervision. Health literacy of females was found higher than males regarding gender. When analyzing the average health literacy of males, it was seen that males had insufficient health literacy. The results of our study are not inconsistent with the results

of the study of Tanrıöver et al, in which they investigated health literacy in Turkey in 2014. There are also studies in the literature reporting that the health literacy of females is higher than males like in our study.[12, 15, 20] In our study, it was found that females were more successful than males understanding and using health literacy information. In other words, we can say that females are eager carrying out their duties and responsibilities. Studies examining the role of gender on health literacy in the literature report different results.[4, 5, 17] Since there are many factors affecting health literacy, we think that different results may occur in studies due to cultural differences in the society. Many factors such as age, educational status, city of residence and chronic illnesses may affect health literacy level.[21, 22] Previous studies have reported that education level, social status, economic level and chronic status of the disease affect health literacy of women.[6, 12] Among these parameters, education level and chronic status of disease were examined in our study. In addition to these parameters, physiotherapy-specific parameters that have not been evaluated previously in the literature were also evaluated in our study. In this study, although there was no difference between men and women in terms of education level and chronic status of disease, the health literacy level of women was found higher. It should be considered that an individual with a low health literacy level may have low reading skills. As in the studies in the literature, education level and health literacy level were found to be related in our study, Studies report that people with lower education show not only lower health literacy but also they have lower health status but there was no difference between genders in terms of education level.[23] Also, there was no difference between men and women in physiotherapy-specific parameters such as physiotherapy history, disease area, number of sessions received. For this reason, we think that the higher health literacy level of women than men may be related to field of interest that were not examined in this study. Health-related information is given in many programs specific to women on television and social media. Health is a subject that interests in women more than men. The reason how men and women differ in their health beliefs and behaviors is explained in the literature as "mother inflict" and "hegemonic masculinity".[24, 25] In our study, while the number of sessions was not associated with health literacy, the level of health literacy was found to be higher in patients who received physiotherapy before compared to patients who did not. The number of physiotherapy sessions and physiotherapy background parameters have not been examined in the literature. There was no difference between men and women in terms of physiotherapy history. Since many treatment approaches included in physiotherapy and rehabilitation clinics require active participation of the patient and an active learning process, health literacy level of the patients play a vital role to increase the effectiveness of the treatment. We believe increasing the health literacy level of patients will make important contributions to the patient's treatment process. With the aim of increasing health literacy, it is important for the physiotherapists to share the objectives of the treatment program, the effectiveness of the applied agents and techniques with the patient. Additionally, technological opportunities can be used to teach the given exercises better.[26-28] It may be useable to teach the exercises not only through the picture booklet, but also by giving both verbal and auditory stimulation repeatedly, considering the motor learning process and learning-physiology, and teaching the given exercises by applying them under a physiotherapist supervision. It is seen that the studies in the literature are on the investigation of the level of health literacy,[2, 3, 11-13] but studies on improving the level of health literacy are rarely.[29, 30] As it is known, while men tend to programs related to sports and economy; women tend to TV programs related to health, beauty and food. Health-related issues are included more in programs for women and women's' role as a mother as, a sociological concept, mother's roles in raising children positively affect women's health literacy level.[7] Including health-related issues in men's TV programs as well as women would be an important step to develop men's health literacy. Future sociological studies will shed light on this issue.

Limitations

Individuals included in the study from a

restricted geographic area is a limitation of the study. Also, small sample size is the limitation for this study. Another limitation is that it takes a long time to answer the questionnaire due to the large number of survey questions. This caused reluctance in the participants to participate or continue the study.

Conclusion

According to our result, men's health literacy was found lower than women regardless of education level, acute or chronic disease status and many other factors. Most of the treatment methods applied in the field of physiotherapy and rehabilitation are based on the ability to understand and apply commands. Developing health literacy contributes to the continuity of exercises and making the learned protective strategies a lifestyle. Also, considering that gender may affect the health literacy level will increase the success of the treatment applied.

Conducting studies to improve the health literacy level in future studies and offering recommendations to healthcare professionals based on the results of these studies will make significant contributions to both the patients, the healthcare professional, and the cost of treatment. It should be considered that men have lower levels of health literacy while physiotherapy treatment sessions and when giving a home program. To increase men's interest in health and improve health literacy, different strategies may be followed by making use of social media, television, and brochures. Future sociological studies on the subject will clarify this issue.

Acknowledgement: *None*

Authors' Contributions: AG: Study design, literature search, data collecting, data analysis/interpreting, writing; **ZE:** Study design, data interpreting, project management; **GİK:** Data analysis/interpreting, critical review.

Funding: *None*

Conflicts of Interest: *None*

Ethical Approval: The protocol of the present study was approved by the Hacettepe University Clinical Research Ethics Committee (issue: GO 16/282-17 date: 19.04.2016).

REFERENCES

1. Andrus MR, Roth MT. Health literacy: a review. Pharmacotherapy. 2002;22:282-302.
2. Tözün M, Sözmen MK. Halk sağlığı bakışı ile sağlık okuryazarlığı. Smyrna Tıp Derg. 2015;2:48-54.
3. Tanrıöver MD, Yıldırım HH, Ready FND, et al. Türkiye sağlık okuryazarlığı araştırması. Ankara: Sağlık-Sen Yayınları; 2014.
4. Clouston SA, Manganello JA, Richards M. A life course approach to health literacy: the role of gender, educational attainment and lifetime cognitive capability. Age Ageing. 2017;46:493-9.
5. Lee HY, Lee J, Kim NK. Gender differences in health literacy among Korean adults: do women have a higher level of health literacy than men? American Journal of Men's Health. 2015;9:370-9.
6. Dehghankar L, Panahi R, Kekefallah L, et al. The study of health literacy and its related factors among female students at high schools in Qazvin. J Health Lit. 2019;4:18-26.
7. Corrarino JE. Health literacy and women's health: challenges and opportunities. J Midwifery Women's Health. 2013;58:257-64.
8. Sørensen K, Van den Broucke S, Pelikan JM, et al. Measuring health literacy in populations: illuminating the design and development process of the European Health Literacy Survey Questionnaire (HLS-EU-Q). BMC Public Health. 2013;13:1-10.
9. Aras Z, Temel Bayık A. Sağlık Okuryazarlığı Ölçeği'nin Türkçe formunun geçerlik ve güvenirliğinin değerlendirilmesi. Florence Nightingale J Nurs. 2017;25:85-94.
10. Levasseur M, Carrier A. Do rehabilitation professionals need to consider their clients' health literacy for effective practice? Clin Rehabil. 2010;24:756-65.
11. Aytar A, Tuzun EH, Eker L. Prevalence and related factors of limited health literacy in patients with chronic musculoskeletal diseases. Turk J Phys Med Rehab. 2017;28:54-8.
12. Ozdemir H, Alper Z, Uncu Y, et al. Health literacy among adults: a study from Turkey. Health Educ Res. 2010;25:464-77.
13. İkışık H, Turan G, Kutay F, et al. Üçüncü basamak sağlık kuruluşuna başvuran hastaların sağlık okuryazarlığı düzeyinin incelenmesi. J Ankara Univ Fac Med. 2020;73:247-252.
14. Magasi S, Durkin E, Wolf MS, et al. Rehabilitation consumers' use and understanding of quality information: a health literacy perspective. Arch Phys Med Rehabil. 2009;90:206-12.
15. Temel AB, Çimen Z. Kronik Hastalığı Olan Yaşlı

Bireylerde Sağlık Okuryazarlığı, Sağlık Algısı Ve İlişkili Faktörler. Ege Üniv Hemşire Fak Derg. 2017;33:105-25.
16. Güven A. Sağlık okuryazarlığını etkileyen faktörler ve sağlık okuryazarlığı ile hasta güvenliği ilişkisi [Yüksek Lisans Tezi]. Ankara: Hacettepe Üniversitesi; 2017.
17. Mantwill S, Monestel-Umaña S, Schulz PJ. The relationship between health literacy and health disparities: a systematic review. PLoS One. 2015;10:e0145455.
18. Gazmararian JA, Williams MV, Peel J, et al. Health literacy and knowledge of chronic disease. Patient Educ Couns. 2003;51:267-75.
19. Williams MV, Baker DW, Parker RM, et al. Relationship of functional health literacy to patients' knowledge of their chronic disease: a study of patients with hypertension and diabetes. Arch Intern Med. 1998;158:166-72.
20. Uğurlu Z, Akgün HS. Sağlık kurumlarına başvuran hastaların sağlık okuryazarlığının ve kullanılan eğitim materyallerinin sağlık okuryazarlığına uygunluğunun değerlendirilmesi. Mersin Univ Saglık Bilim Derg. 2011;12:96-106.
21. Taggart J, Williams A, Dennis S, et al. A systematic review of interventions in primary care to improve health literacy for chronic disease behavioral risk factors. BMC Fam Pract. 2012;13:1-12.
22. Jacobs RJ, Lou JQ, Ownby RL, et al. A systematic review of eHealth interventions to improve health literacy. Health Informatics J. 2016;22:81-98.
23. Van Der Heide I, Wang J, Droomers M, et al. The relationship between health, education, and health literacy: results from the Dutch Adult Literacy and Life Skills Survey. J Health Commun. 2013;18:172-84.
24. Furnham A, Annis J, Cleridou K. Gender differences in the mental health literacy of young people. Int J Adolesc Med Health. 2014;26:283-92.
25. SaeediKoupai M, Motaghi M. Comparing health literacy in high school female students and their mothers regarding women health. J Health Lit. 2017;1:220-9.
26. Punt IM, Armand S, Ziltener J-L, et al. Effect of Wii Fit™ exercise therapy on gait parameters in ankle sprain patients: A randomized controlled trial. Gait Posture. 2017;58:52-8.
27. Knoeppel DE. Alternative Cybex exercise positions. J Orthop Sports Phys Ther. 1985;7:73-6.
28. Kim H-G, Nam H-K. The effect of thera band exercise on muscle flexibility, balance ability, muscle strength in elderly women. J Korean Acad Community Health Nurs. 2011;22:451-7.
29. Kountz DS. Strategies for improving low health literacy. Postgrad Med. 2009;121:171-7.
30. Batterham RW, Hawkins M, Collins P, et al. Health literacy: applying current concepts to improve health services and reduce health inequalities. Public Health. 2016;132:3-12.