RESEARCH ARTICLE

THE LEVEL OF HEALTH LITERACY OF ACADEMICIANS AND FACTORS AFFECTING IT *

Mehmet DOĞAN **
Fevziye ÇETİNKAYA ***

ABSTRACT

It is important to consider the level of health literacy in evaluating individuals in health-related matters. This study was conducted to determine the level of health literacy of the academic staff working at non-health schools in Kayseri Erciyes University and the affecting factors. This descriptive and cross-sectional study was conducted on 690 academicians with "European Health Literacy Scale Turkish Version" (HLS-TR). 28.8% of the research group has sufficient level of health literacy and 28.8±8.4 average score. The sufficient health literacy level is higher in women, married ones, the ones having no chronical diseases and research assistants. In logistic regression analysis, the sufficient HL level of those married to a health worker is 1.8 times higher when compared to those who are not married to a health worker. The sufficient HL level of those who are considered as healthy is 1.72 times higher than those who are considered to have bad health. To increase the level of health literacy, multidisciplinary health training projects in which the state, education system, universities, health system and media are included should be carry out.

***Key words**: Health Literacy, University, Academician, HLS-TR*

ARTICLE INFO

* *This study was presented as an oral presentation at the "IV Jubilee Congress of General Medicine" congress held in Bulgaria between 22-26 November 2018. In addition, it was supported by Erciyes University Scientific Research Projects Unit with TDK-2016-6357.*

** *Erciyes Üniversity, mehmetdogan@erciyes.edu.tr*
https://orcid.org/0000-0002-2971-7246

*** *Erciyes Üniversity,, fevcetin@erciyes.edu.tr*
https://orcid.org/0000-0001-5590-7011

Recieved: 16.11.2018
Accepted: 18.03.2019

Cite This Paper:

Doğan, M., Çetinkaya, F. (2019). The Level of Health Literacy of Academicians and Factors Affecting It. Hacettepe Sağlık İdaresi Dergisi, 22(2): 389-400.

ARAŞTIRMA MAKALESİ

AKADEMİSYENLERDE SAĞLIK OKURYAZARLIĞI DÜZEYİ VE ETKİLEYEN ETMENLER *

Mehmet DOĞAN **
Fevziye ÇETİNKAYA ***

ÖZ

Sağlıkla ilgili konularda bireyi değerlendirmede sağlık okuryazarlık düzeyinin göz önünde bulundurulması önemlidir. Bu çalışma, Kayseri Erciyes üniversitesi sağlık dışı okullarda görev yapan akademik personelin sağlık okuryazarlığı düzeyini ve etkileyen etmenleri belirlemek amacıyla yapılmıştır. Tanımlayıcı ve kesitsel tipteki bu çalışmada "Avrupa Sağlık Okuryazarlığı Ölçeği Türkçe Uyarlaması" (ASOY-TR) ölçeğiyle 690 akademisyen üzerinde yapıldı. Araştırma grubunun %28,8`i yeterli sağlık okuryazarlık düzeyinde ve 28,8±8,4 puan ortalamasındadır. Yeterli sağlık okuryazarlığı düzeyi; kadınlarda, evlilerde, kronik hastalığı bulunmayanlarda ve araştırma görevlilerinde daha yüksektir. Lojistik regresyon analizinde, yeterli SOY düzeyi; eşi sağlık çalışanı olanlarda, eşi sağlık çalışanı olmayanlara göre 1,86 kat, sağlık durumunu iyi olarak değerlendirenlerde, kötü olarak değerlendirenlere göre 1,72 kat daha yüksektir. Sağlık okuryazarlığının düzeyinin artırılması için devlet, eğitim sistemi, üniversite, sağlık sistemi ve medyanın birlikte olduğu çok disiplinli sağlık eğitimi projeleri yapılmalıdır.

***Anahtar Kelimeler**: Sağlık Okuryazarlığı, Üniversite, Akademisyen, ASOY-TR*

MAKALE HAKKINDA

* *Bu çalışma, 22-26 Kasım 2018 tarihleri arasında Bulgaristan'da düzenlenen "IV Jubilee Congress of General Medicine" kongresinde sözlü sunum olarak sunulmuştur. Ayrıca, Erciyes Üniversitesi Bilimsel Araştırma Projeleri Birimi tarafından TDK-2016-6357 kodlu proje ile desteklenmiştir.*

** *Öğr. Gör. Dr., Erciyes Üniversitesi, mehmetdogan@erciyes.edu.tr*
https://orcid.org/0000-0002-2971-7246

*** *Prof. Dr., Erciyes Üniversitesi Tıp Fakültesi Halk Sağlığı, fevcetin@erciyes.edu.tr*
https://orcid.org/0000-0001-5590-7011

Gönderim Tarihi: 16.11.2018
Kabul Tarihi: 18.03.2019

Atıfta Bulunmak İçin:

Doğan, M., Çetinkaya, F. (2019). The Level of Health Literacy of Academicians and Factors Affecting It. Hacettepe Sağlık İdaresi Dergisi, 22(2): 389-400.

I. INTRODUCTION

Today, the health care system is complex for those benefiting from the service and those who will benefit from it in the future (Dennis et al. 2012). Presentation of health services has arisen the necessity for individuals to be informed about their own health and illness, to take part in the decision process and to take responsibility (Kramer et al. 2014). While it is targeted to include individuals in the system and in the decision-making mechanism, it is not known in most cases how much people are ready to cope with this responsibility given to them (Smith 2012). To give these responsibilities to the individuals who are not ready for this has the potential of threatening health security and the sustainability of health care system instead of protecting both the system and individuals. For this reason, while the participation of individuals in healthcare system and the ability and motivation to speak and take responsibility for their own health is assessed, it is important to determine the level of health literacy of individuals and the society (Sørensen et al. 2012).

Literacy skills are important for individuals to access their health information, to use healthcare services, to manage their own health, to obtain desired results for health and to maintain health (Morris et al. 2006). Health literacy, which is defined as the level of capacity to acquire, interpret and understand basic health knowledge and services required for individuals to make appropriate health-related decisions, provides a link between the literacy skills and abilities of individuals and their health (Nielsen-Bohlman et al. 2004).

Adequate health literacy allows the individual to make conscious decisions about health care services, disease prevention and health improvement issues (Sørensen et al. 2012). It is stated that inadequate health literacy affects individuals' levels of knowledge about their diseases and symptoms and their learning related to manage their diseases by themselves, and it is also indicated that it causes individuals to have inadequacy to adhere medical advice, to have more risk to be hospitalized, to increase the rates of benefitting from high cost services such as emergency (Dewalt et al. 2004; Mancuso 2008; Tokuda et al. 2009).

Although health literacy is related to the level of general literacy of individuals, and the individuals who are confronted with complicated health system, medical words used by healthcare staff, new health concept and health problems have adequate level of literacy, it is known that these factors adversely affect health literacy (Martin et al. 2009). Even if individuals have similar levels educational background, the skills of reading, writing, understanding and calculating can be different. For this reason, it is important to consider the level of health literacy, not the level of education, when evaluating individuals in health-related matters (Berkman et al. 2011).

The main task of academicians is education and they contribute to the progress of science by making researches and publications, and they also contribute to the improvement of the health level of the society by informing in their fields of expertise through seminars, columns, and radio and television programs (Odabaşı et al. 2010; Deem, Lucas 2007). Parallel to the level of literacy in academicians, a high level of health literacy is expected. Academicians' low level of health literacy causes problems while they transmit their health-related messages both to students and society, and also it can prevent them to improve their own health and solve and overcome health-related problems.

This study was conducted to determine the level of health literacy of the academicians working at non-health schools in Kayseri Erciyes University and the affecting factors.

II. METHOD

This descriptive and cross-sectional study was conducted at Kayseri Erciyes University in 2016. Erciyes University ethics committee approval was received for the study.

It was planned to reach the whole population by including all the 1068 academicians working for non-health schools in Erciyes University (except for the faculties of medicine, health sciences, pharmacy, dentistry and veterinary). During the study, 48 academicians could not be reached (the criteria of failing to reach was accepted as visiting five times), 23 academicians were on leave (military duty, assignment, maternity leave), 31 academicians did not accept to participate in the study and were unwilling to answer the questionnaire and there were missing parts in 10 academicians' questionnaire forms, so the study was conducted on 690 academicians. The reach rate is 64.6%.

The questionnaire consists of two parts. The first part includes descriptive characteristics including socio-demographic and professional characteristics (age, gender, marital status, title, working years), health-related characteristics (chronic diseases, health status evaluation, use of health care services), health behavior characteristics (alcohol drinking and smoking, physical activity), and health practices (physician check-up and blood pressure measuring). The second part is the health literacy scale.

"The European Health Literacy Survey Questionnaire" (HLS-EU-Q) is a scale developed by HLS-EU Consortium within European Health Literacy Project 2009-2012, and "European Health Literacy Turkish Version" (HLS-TR) questionnaire, which has been obtained by translating the scale into Turkish, was used as the scale in the study. Health Literacy Turkish Version (HLS-TR) includes 47 questions, and the answers were assessed in a scale that the questions were rated from 1 to 4 (1=very difficult, 2= difficult, 3= easy, 4= very easy). This scale is based on the principle of evaluation of the individuals' perception that how "easy" or "difficult" the behavior that is stated in each question.

Categorizing the level of health literacy depending on index values in order to make it comparable:

- (0-25) point **Inadequate Health Literacy**,
- (>25-33) point **Problematic** – **Limited Health Literacy**
- (>33-42) point **Adequate Health Literacy**
- (>42-50) point **Excellent Health Literacy**

The internal consistency of the Turkish version of the scale was found as (Cronbach α= 0.97) in "Turkey Health Literacy Research" conducted by Pelikan et al. in 2010, and it was found as (Cronbach α= 0.95) in "The Reliability and Validity Study of Turkey Health Literacy Scales" conducted by the Ministry of Health (Durusu-Tanrıöver et al. 2014; Okyay, Abacıgil 2016).

Pursuant to the calculating formula of the scale, the score and level of health literacy was determined. Health literacy level was re-classified as adequate (excellent/adequate) and inadequate (limited/inadequate).

During the research, the academicians included in the study group were visited at their offices by the researcher. The participants were informed about the purpose of the study and that the data would be confidential, and their oral and written consents were obtained. The questionnaire forms were delivered and retrieved in sealed envelopes.

The data were evaluated by SPSS 15.0 software. Mean and standard deviation was used for continuous data, and chi-square test was used while comparing the groups in categorical data. In addition, binary logistic regression analysis was used to determine the effect on adequate health literacy. Odds ratio (OR) and 95% confidence interval of (CI) was calculated. The value of $p<0.05$ was accepted as statistically significant.

In the evaluation of logistic regression analysis, "inadequate, limited/problematic, adequate, excellent" health literacy categories were re-categorized as adequate and inadequate health literacy, and the general health status variable classified as "very good, good, medium, bad, very bad" was re-classified as "very good/good, medium/bad."

III. FINDINGS

Table 1. Distribution of General and Sub-Dimensions Health Literacy Indexes of Academicians

Health literacy indexes	**Inadequate**		**Problematic**		**Sufficient**		**Excellent**	
(n=690)	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
General health literacy	211	30.6	280	40.6	156	22.6	43	6.2
Health care health literacy	198	28.7	241	34.9	194	28.1	57	8.3
Disease prevention health Literacy	248	35.9	225	32.6	162	23.5	55	8.0
Health promotion health Literacy	241	34.9	217	31.4	172	24.9	60	8.7
Access/obtain Information Relevant to health	192	27.8	222	32.2	205	29.7	71	10.3
Understand ınformation Relevant to health	159	23.0	252	36.5	205	29.7	74	10.7
Appraise/judge/evaluate Information relevant to health	306	44.3	186	27.0	147	21.3	51	7.4
Apply / use ınformation Relevant to health	224	32.5	236	34.2	179	25.9	51	7.4

68.7% of the participants in the research group are male and 31.3% are female, and the average age of them is 37.2±9.2. 83.8% of the academicians work at the faculties, 34.2% is research assistants and 33.0% have been working for 5 and six years at the university. 30.6% of the academicians have inadequate, 40.6% have problematic, 22.6% have adequate and 6.2% have excellent general health literacy level. The highest level of adequate health literacy (adequate/excellent) is the health literacy of understanding health information (40.4%), and the lowest level of health literacy is the health literacy of accessing health information (26.4%) (Table 1). The average of the health literacy of the participants is 28.8±8.4. The sub index of applying the knowledge in healthcare services is the highest health literacy category (35.3±10.5), and the lowest health literacy category is the applying the knowledge for prophylaxes (23.4±12.6).

Table 2. Adequate Health Literacy Levels According to Various Characteristic of Academicians

Characteristic	Total No	No	%	X^2	p-Value
Sex					
Male	474	131	27.6	1.069	0.301
Female	216	68	31.5		
Age group (years)					
30 and under	205	64	31.2	1.759	0.415
30 – 49	396	114	28.8		
50 and over	89	21	23.6		
Marital status					
Married	486	148	30.5	2.082	0.149
Single/divorced	204	51	25.0		
Spouse's occupation (n=486)					
Non-Health professional	435	126	29.0	**4.329**	**0.037**
Health professional	51	22	43.1		
Academic title					
Professor/Assoc Prof/Assistant Prof	311	84	27.0	1.554	0.460
Instructor/lecturer/specialist	143	40	28.0		
Research assistant	236	75	34.2		
Years of seniority					
5 and under	228	69	30.3		
6-10	137	39	28.5	3.006	0.557
11-20	191	53	27.7		
21-30	108	34	31.5		
31 and over	26	4	15.4		
Working area					
Natural and applied science	304	79	26.0	2.455	0.293
Social sciences	276	88	31.9		
Educational sciences	110	32	29.1		
Chronic disease					
Yes	135	36	26.7	0.534	0.386
No	555	163	29.4		
General health status					
Good	554	171	30.9	**5.621**	**0.018**
Moderate/bad	136	28	20.6		

Although the level of health literacy is high in females, married ones, those under 30 years old, those who have been working for 21-30 years, research assistants and those who do not have chronic diseases, the difference is not found significant ($p<0.05$).

While 30.9% of those who state they have good health have adequate level of health literacy, 20.6% have inadequate health literacy level, and there is a significant difference between them ($p<0.05$) (Table 2).

Table 3. Logistic Regression Analysis of the Various Characteristics of the Academicians

Variable	β	p	OR	95% Confidence Interval (CI)	
				Low	Up
Sex					
Male	Ref		1		
Female	0.185	0.302	1.203	0.847	1.708
Age group (years)					
30 and under	Ref		1		
30 – 49	-0.046	0.874	0.955	0.538	1.693
50 and over	-0.431	0.365	0.650	0.256	1.651
Marital status					
Married	Ref		1		
Single/divorced	-0.273	0.150	1.314	0.906	1.904
Spouse's occupation (n=486)					
Non-health professional	Ref		1		
Health professional	**0.621**	**0.040**	**1.860**	**1.030**	**3.362**
Academic title					
Professor/Assoc Prof/Assistant Prof	Ref		1		
Instructor/Lecturer/Specialist	0.048	0.831	1.049	0.674	1.634
Research Assistant	0.230	0.224	1.259	0.869	1.825
Years of seniority					
5 and under	Ref		1		
6-10	-0.087	0.716	0.917	0.575	1.462
11-20	-0.122	0.573	0.885	0.579	1.353
21-30	0.057	0.821	1.059	0.646	1.736
31 and over	-0.870	0.122	0.419	0.139	1.261
Working area					
Natural and applied science	Ref		1		
Social sciences	0.301	0.108	1.351	0.936	1.950
Educational sciences	0.225	0.394	1.252	0.746	2.101
Chronic disease					
Yes	Ref		1		
No	0.134	0.534	1.143	0.749	1.745
General health status					
Good	Ref		1		
Moderate/bad	**0.544**	**0.019**	**1.722**	**1.095**	**2.709**

In logistic regression analysis, adequate health literacy level is found significantly high in the variables of partner's profession and the evaluation of health status (Table 3). The level of adequate health literacy of prophylaxis of those whose spouses are health workers is 1,82 times higher than those whose spouses are not health workers. They also have 1.79 times higher level of adequate health literacy of health improvement. The level of adequate health literacy of healthcare services of those who state their health status as good is 1.93 times higher than those who state their health status as bad. The level of adequate health literacy of health improvement of those who state their health status as good is 2.1 times higher than those who state their health status as bad.

IV. DISCUSSION

In this study, 28.8% of the academicians have adequate health literacy level (Table 1). According to "Turkey Health Literacy" study conducted in Turkey, 35.4% of the individuals (Durusu-Tanrıöver et al. 2014) and according to the study conducted by the Ministry of Health, 47.3% of the individuals (Okyay, Abacıgil 2016) have adequate health literacy level. According to the studies conducted abroad, 55.9% of the individuals in Serbia (Jovic-Vranes, Bjegovic-Mikanovic 2012), 84.5% in Japan (Tokuda et al. 2009), 61.0% in England (Boxell et al. 2012), 79.0% in Australia (Adams et al. 2009), 50.0% in USA (Kirk et al. 2012; Shah et al. 2010) and 52.5% of the participants in "European Health Literacy" study have adequate health literacy level (Pelikan et al. 2012).

Academicians' health literacy level is lower than the results of the studies conducted on the society both in Turkey and abroad. It is surprising and thought-provoking that the health literacy of academicians who are role models for the society as well as work for the education sector is low. Academicians' focusing on their own fields can lead them to reduce interest and curiosity in the field of health. A low level of health literacy can lead to negative health outcomes, in especially academics' own health, in their families' and then in their environment.

In the subscale health literacy categories, the highest level of adequate health literacy is in the health care services health literacy category (36.4%) (Table 1). This may be due to the high tendency to use therapeutic health services. The sub index of applying the knowledge in healthcare services, in which three out of every four people are at the level of adequate health literacy, is the highest adequate health literacy category. This may mean that there is no problem in the ability to make and implement decisions about health services.

Prophylaxis health literacy has the lowest level of adequate health literacy (31.5%) among the subscale health literacy categories (Table 1). This may be due to a lack of propensity to use preventive health care services and lack of information on protective factors against diseases. The sub index of applying the knowledge for prophylaxis is the lowest adequate health literacy category, and three out of every four people have the inadequate health literacy level in this sub index. This may be due to a lack of ability to make and apply conscious decisions about risk factors that can negatively impact health.

One of the factors that are stated to be effective on the health literacy levels of individuals is gender. According to "European Health Literacy" study, it is determined that in Holland, Germany, Poland, Austria and Ireland females' level of HL is significantly higher than the males' (Pelikan et al. 2012). Although the difference is not significant in this study, adequate HL levels of females are found higher than males' (Table 2). In many studies, it is determined that higher education level increases females' adequate HL levels by creating a positive effect and synergistic action (Tokuda et al. 2009; Durusu-Tanrıöver et al. 2014; Jovic-Vranes, Bjegovic-Mikanovic 2012; Adams et al. 2009).

In the logistic regression analysis, it is determined that those whose spouses are health workers have higher adequate health literacy level than those whose spouses are not health workers. The adequate health literacy level of those whose spouses are health workers is 1.86 times higher than those whose spouses are not health workers (Table 2). Having a health worker among household members can increase knowledge and awareness about health and diseases.

In the studies conducted, it is revealed that the ages of individuals are effective on their health literacy (Tokuda et al. 2009; Durusu-Tanrıöver et al. 2014; Jovic-Vranes, Bjegovic-

Mikanovic 2012; Adams et al. 2009; Pelikan et al. 2012; Ozdemir et al. 2010). Advanced age is a risk factor for limited health literacy (Sequeira et al. 2013). With the advancing age it is stated that limited health literacy has emerged as a result of a decrease in cognitive function and sensory abilities (Benson, Forman 2002; Downey, Zun 2008; Marks et al. 2010). Among individuals aged over 65 years without cognitive dysfunction, those with limited health literacy showed rapid loss of functioning, even in just one year (Sequeira et al. 2013). Although there is no significant difference between HL levels of different age groups, adequate health literacy level is 31.2% in those under 30, 28.8% in those between the ages of 30-49 and 23.6% in those over 50 (Table 2).

In related studies it is revealed that the individuals who have high level of education have adequate health literacy level (Morris et al. 2006; Durusu-Tanrıöver et al. 2014; Jovic-Vranes, Bjegovic-Mikanovic 2012; Adams et al. 2009; Ozdemir et al. 2010). However, even if low level of education and total education period is a risk factor for limited health literacy, high education level is not sufficient for adequate health literacy alone. It is determined that in America 38.0% of the individuals who have college/university degree have limited health literacy level (Shah et al. 2010). It is stated that the increase in the period after formal education graduation leads to limited health literacy (Shah et al. 2010; Benson, Forman 2002; Zun 2008; Marks et al. 2010). In the logistic regression analysis, it is found that while research assistants have the highest adequate health literacy level, faculty members have the lowest adequate health literacy level (Table 2). This may be due to the increase in the period after the graduation from formal education.

Low functional health literacy is associated with low health status (Dennis et al. 2012; Smith 2012). According to the study conducted by the Ministry of Health in Turkey, the health literacy level of 91.7% of the participants who define their health status as bad is inadequate/problematic, and the health literacy level of the 23.3% of the participants who defines their health status as excellent is inadequate/problematic (Okyay, Abacıgil 2016). According to a study conducted in Austria, a significant relation is found between the health status evaluation and health literacy. It is determined that 62.0% of those who define their health status as excellent/very good, 54.0% of those who define their health status as good, 42.0% of those who define their health status as medium/bad have adequate health literacy level (Adams et al. 2009). In the study of "European Health Literacy", it is found that there is a strong and significant relation between health literacy and the participants' self-evaluation of their health status. It is determined that the participants who state that they are healthier have a higher level of health literacy (Pelikan et al. 2012). According to the logistic regression analysis, adequate health literacy level of those who define their health status as good is 1.72 times higher than those who define their health status as bad (Table 3). In addition, the adequate health literacy of healthcare services level of those who define their health status as good is 1.93 times higher and their adequate health literacy of health improvement level is 2.1 times higher than those who define their health status as bad. The result obtained from this study is found to be consistent with the results of other studies.

General and sub-index health literacy levels of the academicians are low. Awareness activities for health literacy for the academicians, who are educators and role models, should be increased. After formal education, activities and trainings should be organized for academicians to improve health literacy through non-formal education.

REFERENCES

1. Adams R. J., Appleton S. L., Hill C. L., Dodd M., Findlay C. and Wilson D. H. (2009) Risks Associated with Low Functional Health Literacy in an Australian Population. **The Medical Journal of Australia** 191: 530-534.

2. Benson J. G. and Forman W. B. (2002) Comprehension of Written Health Care Information in an Affluent Geriatric Retirement Community: Use of the Test of Functional Health Literacy. **Gerontology** 48: 93–97.

3. Berkman N. D., Davis T. C. and McCormack L. (2010) Health Literacy: What is it? **Journal of Health Communication** 15: 9–19.

4. Boxell E. M., Smith S. G., Morris M., Kummer S., Rowlands G., Waller J., Wardle J. and Simon A. E. (2012) Increasing Awareness of Gynecological Cancer Symptoms and Reducing Barriers to Medical Help Seeking: Does Health Literacy Play a Role? **Journal of Health Communication: International Perspectives** 17: 265-279.

5. Deem R. and Lucas L. (2007) Research and Teaching Cultures in Two Contrasting UK Policy Contexts: Academic Life in Education Departments in Five English and Scottish Universities. **The Journal of Higher Education** 54: 115-133.

6. Dennis S., Williams A., Taggart J., Newall A., Denney-Wilson E., Zwar N., Shortus T. and Harris M. F. (2012) Which Providers Can Bridge the Health Literacy Gap in Lifestyle Risk Factor Modification Education: A Systematic Review and Narrative Synthesis. **BMC Family Practice** 13(1): 44.

7. Dewalt D. A., Berkman N. D., Sheridan S., Lohr K. N. and Pignone M. P. (2004) Literacy and Health Outcomes. **Journal of General Internal Medicine** 19: 1228-1239.

8. Downey L. V. and Zun L. S. (2008) Assessing Adult Health Literacy in Urban Healthcare Settings. **Journal of National Medicine Association** 100: 1204–1208.

9. Durusu-Tanrıöver M., Yıldırım H. H., Demiray-Ready F. N., Çakır B. ve Akalın H. E. (2014) **Turkey Health Literacy Study**. Sağlık-Sen Press, Ankara.

10. Jovic-Vranes A. and Bjegovic-Mikanovic V. (2012) Which Women Patients Have Better Health Literacy in Serbia? **Patient Education and Counselling** 89: 209-212.

11. Kirk J. K., Grzywacz J. G., Arcury T. A., Ip E. H., Nguyen H. T., Bell R. A., Saldana S. and Quandt S. A. (2012) Performance of Health Literacy Tests Among Older Adults with Diabetes. **Journal of General Internal Medicine** 27: 534-540.

12. Kramer M. H., Bauer W. and Dicker D., Durusu-Tanriover M., Ferreira F., Rigby S. P., Roux X., Schumm-Draeger P.M., Weidanz F. and van Hulsteijn, J. H. (2014) The Changing Face of Internal Medicine: Patient Centred Care. **European Journal of International Management** 25: 125-127.

13. Mancuso J. M. (2008) Health Literacy: A Concept/Dimensional Analysis. **Nursing & Health Sciences** 10: 248-255.

14. Marks J. R., Schectman J. M., Groninger H. and Plews-Ogan M. L. (2010) The Association of Health Literacy and Socio-Demographic Factors with Medication Knowledge. **Patient Education and Counseling** 78(3): 372–376.

15. Martin L. T., Ruter T. and Escarce J. J., Ghosh-Dastidar B., Sherman D., Elliott M., Bird C.E., Fremont A., Gasper C., Culbert A. and Lurie N. (2009) Developing Predictive Models of Health Literacy. **Journal of General Internal Medicine** 24: 1211-1216.

16. Morris N. S., MacLean C. D., Chew L. D. and Littenberg B. (2006) The Single Item Literacy Screener: Evaluation of a Brief Instrument to Identify Limited Reading Ability. **BMC Family Practice** 7(1): 21-28.

17. Nielsen-Bohlman L., Panzer M. A. and Kindig D. A. (2004) **Health Literacy: a Prescription to End Confusion. Institute of Medicine of the National Academies**. National Academies Press, Washington (DC).

18. Odabaşı F. H., Fırat M. and İzmirli S. et al (2010) Being Academician in Globalizing World. **Unıversıty Journal of Socıal Scıences** 10: 127-143.

19. Okyay P. ve Abacıgil F. (2016) **Turkey's Health Literacy Scale Reliability and Validity Study.** Republic of Turkey Ministry of Health, Ankara.

20. Pelikan J. M., Röthlın F. and Ganahl K. (2012) **Comparative Report of Health Literacy in Eight EU Member States**. The European Health Literacy Survey HLS-EU.

21. Ozdemir H., Alper Z. and Uncu Y. (2010) Health Literacy Among Adults: A Study from Turkey. **Health Education Research** 25: 464-477.

22. Sequeira S. S., Eggermont L. H. and Silliman R. A. et al (2013) Limited Health Literacy and Decline in Executive Function in Older Adults. **Journal of Health Communication** 18: 143-157.

23. Shah L. C., West P., Bremmeyr K. and Savoy-Moore R. T. (2010) Health Literacy Instrument in Family Medicine: The "Newest Vital Sign" Ease of Use and Correlates. **Journal of the American Board of Family Medicine** 23: 195–203.

24. Smith C. D. (2012) Teaching High-Value, Cost-Conscious Care to Residents: the Alliance for Academic Internal Medicine–American College of Physicians Curriculum. **Annals of Internal Medicine** 157: 284-286.

25. Sørensen K., Van den Broucke S. and Fullam J. et al (2012) Health Literacy and Public Health: a Systematic Review and Integration of Definitions and Models. **BMC Public Health** 12(1): 80.

26. Tokuda Y., Doba N., Butler J. P. and Paasche-Orlow M. K. (2009) Health Literacy and Physical and Psychological Wellbeing in Japanese Adults. **Patient Education and Counselling** 75: 411-417.