Acıbadem Univ. Sağlık Bilim. Derg. 2025; 16 (3)
https://doi.org/10.31067/acusaglik.1542924

Health Literacy, Health Status Perception, and Educational Background as Predictors of Rational Drug Use Knowledge in Individuals with Chronic Diseases

Seher Zengin[1], Mehmet Karakaş[1], Ebru Çelebi[1], Nurhan Çingöl[1]

[1] Bolu Abant Izzet Baysal University Faculty of Health Sciences Nursing Department, Bolu, Türkiye

Seher ZENGİN
0000-0003-2638-6848
Mehmet KARAKAŞ
0000-0002-0150-6930
Ebru ÇELEBİ
0000-0003-2874-7395
Nurhan ÇİNGÖL
0000-0003-1398-7943

Correspondence: Seher Zengin
Bolu Abant Izzet Baysal University Faculty of Health Sciences Nursing Department, Bolu, Türkiye
Phone: +90 374 254 10 00 - 6119
E-mail: seherzengin@ibu.edu.tr

Received: 03.09.2024
Accepted: 13.03.2025

ABSTRACT

Purpose: This study aimed to determine the predictive role of health literacy, health status perception and education status on the knowledge level of individuals with chronic diseases regarding rational drug use.

Methods: The model of the study is relationship screening and descriptive. The study group consisted of individuals with chronic diseases (n = 272) who applied to two family health centers in a province in the Western Black Sea Region between March 15 and June 3, 2021. Data were collected using the "Individual Identification Form, Health Literacy Scale and Rational Drug Use Scale". Data were analyzed using descriptive tests, Pearson correlation and hierarchical regression tests.

Results: While health literacy and health status perception variables significantly predicted the level of knowledge on rational drug use of individuals with chronic diseases, educational status was not a significant predictor.

Conclusion: As the Health Literacy levels of individuals with chronic diseases increase, the level of Rational Drug Use knowledge also increases. The knowledge levels of individuals with chronic diseases regarding rational drug use are affected by their health literacy levels and health status perception variables. Continuous awareness studies can be conducted to increase the level of knowledge of rational drug use, health literacy levels, and health status perceptions of individuals with chronic diseases.

Keywords: Drug utilization, Health literacy, Chronic disease

ÖZET

Amaç: Bu araştırmada Kronik hastalığı olan bireylerin akılcı ilaç kullanımına ilişkin bilgi düzeyi üzerinde sağlık okuryazarlığı, sağlık durumu algısı ve eğitim durumunun yordayıcı rolünün belirlenmesi amaçlandı.

Yöntemler: Bu çalışmanın modeli, ilişki tarayıcı ve tanımlayıcıdır. Çalışma grubu, 15 Mart - 3 Haziran 2021 tarihleri arasında Batı Karadeniz Bölgesi'ndeki bir ilde iki aile sağlık merkezine başvuran kronik hastalığı olan bireylerden (n = 272) oluştu. Veriler "Bireysel Tanıtım Formu, Sağlık Okuryazarlığı Ölçeği ve Akılcı İlaç Kullanım Ölçeği" kullanılarak toplandı. Veriler, tanımlayıcı testler, pearson korelasyon ve hiyerarşik regresyon testleri kullanılarak analiz edildi.

Bulgular: Kronik hastalığa sahip bireylerin akılcı ilaç kullanımı bilgi düzeylerini sağlık okuryazarlığı ve sağlık durum algısı değişkenleri anlamlı şekilde yordamışken, eğitim durumu ise anlamlı bir yordayıcısı değildi.

Sonuç: Kronik hastalığı olan bireylerin Sağlık Okuryazarlığı düzeyleri arttıkça Akılcı İlaç Kullanımı bilgi düzeyi de artmaktadır. Kronik hastalığa sahip bireylerin akılcı ilaç kullanımı bilgi düzeyleri sağlık okuryazarlığı düzeyleri ve sağlık durumu algısı değişkenlerinden etkilenmektedir. Kronik hastalığa sahip bireylerin akılcı ilaç kullanımı bilgi düzeylerini, sağlık okuryazarlığı düzeylerini ve sağlık durumu algılarını artırmak için sürekli farkındalık çalışmaları yapılabilir.

Anahtar Kelimeler: İlaç kullanımı, sağlık okuryazarlığı, kronik hastalık

Rational drug use (RUD) is defined as patients taking medications appropriate for their clinical needs, in doses that meet their individual requirements, for an adequate duration and at the lowest cost (1). Irrational drug use by individuals has become an important public health problem. Irrational drug use leads to serious health problems such as adverse drug reactions and resistance in various diseases, especially in chronic diseases, and even death in Turkey as in the whole world (2,3). There are many factors affecting individuals' rational drug use. In this study, the predictive levels of some factors, which are thought to be the most effective factors, were investigated.

In the literature, it has been reported that rational drug use and health literacy are related and rational drug use increases as the health literacy levels of individuals increase (4). Health literacy is defined as the knowledge, motivation and competence of people to access, understand, evaluate and apply health information in order to make judgments and decisions about health services, disease prevention and health promotion in daily life (5). It is accepted that health literacy is an important factor that has an impact on health and health outcomes (6,7). Low health literacy level is an important public health problem that can affect the general health of individuals and increase their problems related to diseases (6,7), and it has been determined as a factor that significantly affects adherence to treatment in chronic diseases (8). Health literacy plays an important role in the self-management of chronic diseases, which constitute 47% of the global disease burden (9,10). Low levels of health literacy lead to conditions such as inadequacy in the management of chronic diseases, less compliance with drug treatment, irrational drug use such as not using drugs correctly or regularly, and an increase in the rate of hospitalization (7,11,12).

Health perception is also an important factor affecting individuals' rational drug use. This is because health perception is an individual's subjective assessment of his/her own health status. While some people perceive themselves as healthy despite having one or more chronic diseases, others may perceive themselves as sick even though there is no objective evidence of disease (13). Although health perception has a subjective structure, it is a concept related to rational drug use and health literacy level. In a study conducted by Özişili (2023) with adult individuals, it was found that health perception positively affected rational drug use (14). In addition, it was found that there was a relationship between rational drug use and individuals' health literacy levels, educational status and health perceptions (3,15). In a study conducted with individuals with chronic disease, it was found that their health perception status was low, but individuals who knew the concept of rational drug use beforehand had higher health perceptions (16). In the literature, there are also studies examining the relationship between rational drug use and health literacy in individuals with chronic diseases (12,17), or examining the concepts of rational drug use and health literacy separately (16). When these studies are examined, it is seen that rational drug use and health literacy of patients are important in the management of chronic diseases. However, no study was found to examine whether the health literacy levels, health status perceptions and educational status of individuals with chronic diseases predicted their rational drug use knowledge. There is a need for different studies examining the relationship between these concepts and their predictive status. Since the concepts of rational drug use and health literacy are important concepts especially for individuals with chronic diseases, more research on these concepts is needed. Therefore, this study was conducted to determine whether the levels of health literacy, health status perceptions and educational status of individuals with chronic diseases predict their rational drug use knowledge levels.

Our research questions:

1. What is the level of HL in individuals with chronic diseases?

2. What is the level of RDU knowledge in individuals with chronic diseases?

3. Is there a relationship between HL levels and RDU knowledge levels of individuals with chronic diseases?

4. Do HL levels, health status perceptions, and educational backgrounds of individuals with chronic diseases predict their RDU knowledge levels?

Material and Methods

Study Design and Study Population/Sample

The model of the study is descriptive study based on the correlational model. The population consisted of all individuals with chronic diseases who applied to 12 family health centers in a provincial center in the Western Black Sea Region of Turkey. However, since the population was very large and broad, among the probability sampling

methods, cluster sampling method was used, and the family health centers were divided into 12 clusters, from which two clusters were selected by the drawing method (18). The sample size was determined as 266 using the Gpower 3.1 program, assuming margin of error = 0.05, power = 0.80, and a correlation value between HL and RDU of 0.17.8 Considering the possibility of data loss, the sample size was increased by five percent to reach 280 individuals. However, the study was completed with 272 individuals due to missing data in six questionnaires and outliers in two questionnaires.

Instruments

Individual Description Form: The form, created by utilizing the literature, consists of questions that question the participants' age, gender, marital status, educational status, previously diagnosed chronic diseases and their perception of health status (2,11,12).

Health Literacy Scale: The scale was developed by Sorensen et al. (2013), revised by Toçi et al. (2013), and adapted into Turkish by Aras and Bayık Temel (19). The scale was translated into Turkish as the Health Literacy Scale, and it consists of 25 items and four sub-dimensions. These include access to information, comprehension, appraisal/evaluation, and application/utilization of information. The minimum score is 25 and the maximum score is 125 for the entire scale. The scale items were graded on a five-point Likert scale ranging from "1 = I have no difficulty at all" to "5 = I am unable/incapable/unlikely." The Cronbach's alpha value of the scale was 0.92 for the total score and ranged between 0.62 and 0.79 for the sub-dimensions. Low scores indicate that the level of HL is inadequate, problematic and poor, while high scores indicate that it is adequate and very good. For this study, Cronbach's alpha value was 0.97 for the entire scale, 0.94 for the access to information sub-dimension, 0.89 for the comprehension sub-dimension, 0.92 for the appraisal/evaluation sub-dimension, and 0.89 for the application/utilization sub-dimension.

Rational Drug Use Scale: The scale was developed by Demirtaş et al. (2). The scale consists of one factor and 21 items. The total reliability of the scale was found to be 0.79. The scale was prepared on a three-point Likert-type scale, and it is scored as follows: "Yes: 2 points," "I don't know: 1 point," "No: 0 points." Some items on the scale are reverse scored. The predictive value for the scale was determined to be 34 points. The cut-off score of the scale is 34, and higher scores indicate higher levels of knowledge. The Cronbach's alpha value of the scale was 0.77 for this study.

Data Collection

Before the data collection process, a preliminary application was made in 15 individuals with chronic diseases. No negative feedback was received from the individuals. Data were collected through face-to-face interviews lasting an average of 10-15 minutes with volunteers who had at least one chronic disease, were over the age of 18, could speak Turkish, had no communication problems, and applied to two family health centers selected by lottery between March 15 and June 3, 2021.

Ethical Considerations

Before starting the study, the necessary permissions were obtained from the Social Sciences Human Research Ethics Committee of a university in the Western Black Sea Region (dated 21.01.2020, protocol number 2020/12) and the Provincial Health Directorate. Permission was obtained from the owner for the scales. In addition, the participants were given the necessary information about the study and their verbal and written consents were obtained. The principles of the Declaration of Helsinki were followed.

Statistical Analysis

Research analyzes were conducted with the Statistical Package for the Social Sciences (SPSS 22.0). Percentage, mean-standard deviation, and minimum-maximum values, among descriptive statistics, were used for interpreting the findings. In order to understand the suitability of the data for hierarchical multiple linear regression analysis, the normality of the data set was evaluated with kurtosis and skewness values. Mahalanobis distance values were examined for outliers using a value of 16.27 for the three predictive variables. The six data identified as outliers were removed from the set, and analyses were performed with 272 data. The sample size was found to be sufficient considering the number of predictor variables. As another assumption of multiple regression analysis, the mutual independence of errors was evaluated with Durbin-Watson (1.644) and it was determined that there was no autocorrelation. Pearson correlation coefficients, Tolerance value, Variance Inflation Factor (VIF), and Condition Index (CI) values were analyzed for other assumptions. There was no multiple correlation between predictive variables (<0.80). Tolerance value was above 0.10, VIF value was below 10,

and CI value was below 30. In line with these processes, it was determined that the data were suitable for multiple linear regression analysis. Research data were analyzed by hierarchical regression analysis. In hierarchical regression, perception of health status (good = 1, intermediate and poor = 0) and educational background (high school and above = 1, middle school and below = 0) were taken as dummy variables, and HL was used as a continuous variable. The significance level in the study was taken as 0.05 (20,21).

Results

The mean age of the individuals participating in the study was 56.93 ± 14.51, 50.0% were female, 78.7% were married, and 29.4% were primary school graduates. It was determined that 60.3% of the individuals perceived their health status as moderate, and 36.4% had hypertension (Table 1).

Table 1: Sociodemographic Variables of İndividuals (n=272)

Variable	n	%
Age $\bar{X}$±S.D. = 56.93±14.51 (min: 19, max: 88)		
Gender		
Female	136	50.0
Male	136	50.0
Marital Status		
Married	214	78.7
Single	58	21.3
Education		
Illiterate	15	5.5
Literate	30	11.0
Primary school	80	29.4
Secondary school	46	16.9
High school	75	27.6
University and above	26	9.6
Chronic disease diagnosed by a doctor (n=363)*		
Diabetes	122	33.6
Hypertension	132	36.4
Cardiovascular Disease	72	19.8
Asthma or COPD	13	3.6
Other (Cancer, Kidney failure, Liver, Thyroid etc)	24	6.6
Health Perception		
Good	90	33.1
Middle	164	60.3
Bad	18	6.6

* *More than one answer has been given to this question. Percentages are taken from the answers given.*

The mean RDU total score of the study participants was 31.32 ± 6.54, and the mean HL total score was 94.44 ± 21.38. For the sub-dimensions of HL, the mean score of access to information was 19.44 ± 4.93, the mean score of comprehension was 25.37 ± 6.97, the mean score of appraisal/evaluation was 30.06 ± 7.29, and the mean score of application was 19.56 ± 4.40 (Table 2).

Table 2: Average Scores of Individuals on Rational Drug Use Scale and Health Literacy Scale (n=272)

Scales and Sub-dimensions	Min-Max	$\bar{X}$±S.D.	MSE*
Rational Drug Use Scale Total	14-42	31.32±6.54	0.40
Health Literacy Scale	25-125	94.44±21.38	1.30
Health Literacy Scale Sub-dimensions			
Access to Information	5-25	19.44±4.93	0.30
Understanding Information	7-35	25.37±6.97	0.42
Valuation/Evaluation	8-40	30.06±7.29	0.44
Practice	5-25	19.56±4.40	0.27

* *Mean Standard Error*

There was a moderately positive correlation between the RDU and HL (r = 0.456, p < 0.001) (Table 3).

The results of the variables that predict RDU knowledge and the relationship between variables are presented in Table 4. While the first model (HL) explained 20.8% of the variance (R^2 = 0.208), the second model explained 23.7% of the variance when health status perception was added (R^2 = 0.237), and the third model explained 24.2% of the variance when educational background was added (R^2 = 0.242).

Table 3: Correlation Coefficient For Rational Drug Use Scale and Health Literacy Scale

Scales	Rational Drug Use	Health Literacy
Rational Drug Use	1	0.456*
Health Literacy	0.456[a]	1

* *p<0.001*

In the first model, it was determined that HL (β = 0.456) predicted RDU knowledge in a statistically significant manner (F(1/270) = 71.073, p < 0.001). HL explained RDU knowledge at a rate of 20.8%. In the second model, it was found that when HL (β = 0.426) as well as good health status perception (β = 0.172) were added to the model, RDU knowledge score of individuals increased (F(2/269) = 41.789, p < 0.001). The predictive power for these variables

was 23.7%. According to the third model in which educational background was added, it was found that HL (β = 0.397) and good health status perception (β = 0.168) were predictors of RDU knowledge (F(3/268) = 28.526, p < 0.001), but education level (β = 0.077) was not found to be a statistically significant predictor of RDU knowledge (p > 0.05). However, predictive power (24.2%) increased in the third model (Table 4).

Table 4. Hierarchical Multiple Regression Analysis Results for Variables Predicting Rational Drug Use

Model	B	Standart Error	β	t	R	R^2	F	df
1. Constant	18.130	1.604		11.306*	0.456	0.208	71.07³*	1/270
Health Literacy	0.140	0.017	0.456	8.430*				
2. Constant	18.232	1.578		11.557*	0.487	0.237	41.789*	2/269
Health Literacy	0.130	0.017	0.426	7.862*				
Health Perception (Good=1)	2.387	0.751	0.172	3.179*				
3. Constant	18.687	1.612		11.591-	0.492	0.242	28.526*	3/268
Health Literacy	0.121	0.018	0.397	6.834*				
Health Perception (Good=1)	2.328	0.751	0.168	3.099*				
Education (High school and ve above =1)	1.034	0.778	0.077	1.328				

*$p<0.001$

Discussion

This study investigated the levels of RDU knowledge and HL of individuals with chronic diseases, whether there is a relationship between RDU knowledge and HL, and whether the variables of HL, health perception, and educational background predict RDU knowledge of individuals with chronic diseases.

It was found that the level of RDU knowledge of individuals with chronic diseases was lower than the cut-off point specified in the scale. In a systematic review on RDU in Turkey, it was reported that the level of RDU knowledge of the population was low (22). A study conducted in Ethiopia found that almost a quarter of patients had inadequate knowledge about RDU (23). Unlike the results of this study, in study by Çifçi et al. (3) and Kaya et al. (24), it was found that individuals had adequate knowledge about RDU. Different results may be due to many variables such as individuals' education levels, the region they live in or their knowledge levels. The World Health Organization recommends educating the public to promote RDU (25).

Considering the lower and upper scores specified in the scale, it can be interpreted that the HL level is at a moderate level. In a similar study conducted in China, it was determined that 78.4% of the participants had a low HL level (26). In a study conducted by Yasa in Ordu province with individuals over 18 years of age, it was found that the level of HL was moderate (17). In a study involving elderly individuals in Iran, more than half of the elderly were found to have insufficient HL (27). In the systematic review study conducted by Lima et al. (28), it was determined that the elderly have poor HL. In studies conducted in Turkey, it was found that elderly individuals have low HL (24,29). These results show that the HL levels of especially elderly individuals are below the desired level. This can have negative repercussions on the health and economic indicators of both individuals and countries. Therefore, all health professionals have significant responsibilities for increasing the RDU and HL levels of individuals with chronic diseases. It may be useful to realize all practices and interventions in this direction.

As the HL of individuals with chronic diseases increases, their knowledge about the RDU also increases. In a study in Turkey where meta-analysis was conducted on theses on the relationship between RDU and HL, it was determined that as the level of health literacy increases, rational drug use also increases in the same direction (4). Similarly, a positive relationship was found between HL and RDU in a study conducted on diabetic individuals (12). In a study by Abacıgil et al. (11) conducted with patients aged above 18, it was found that as the level of HL increased, the level of RDU also increased. In a study conducted in Konya with individuals over the age of 18, it was determined that HL

and RDU levels were sufficient. It was stated that one of the factors affecting rational drug use is the HL levels of individuals (24). A study conducted with adults in Japan found that individuals with higher HL levels better understood the information presented in drug leaflets (30). RDU and HL are two important elements that have an impact on health improvement as well as affect and complement each other (15,24). Although the presence of many factors affecting the elements makes it difficult to understand these concepts, these concepts are of great importance in terms of health-related behaviors. For this reason, creating public service announcements, increasing drug and health knowledge levels, raising awareness about these and establishing training polyclinics may be important steps to be taken.

It was found that the RDU knowledge of individuals with chronic diseases was significantly predicted by HL in the first place and by the perception of good health status in the second place. Although education level alone did not predict RDU knowledge, it was found to increase predictive power when evaluated together with HL and good health status perception. These three variables explain 24.2% of RDU knowledge. Kaya et al. (24) reported that HL and RDU affect each other. It has been emphasized that it is important for individuals to have a high level of HL in order to follow a rational way in the stages of prescribing, distributing, selling and using drugs. There is information in the literature that RDU is closely related to education and HL levels (11). In a study by Şengül and Akyıl (16), it was found that health perception and RDU were associated, and as health perception improved, RDU knowledge level also increased. In another study, it was found that health perception affected RDU positively (14). In addition, other studies on RDU have also reported a relationship between RDU and individuals' HL levels, educational backgrounds and health perceptions (3,15). As can be understood from the results of the studies, RDU, HL, education level, and health status perception are concepts that mutually affect each other, and their levels can be changed with various interventions. For this reason, education and interventions to change the levels of these concepts in individuals with chronic diseases become even more important. It is especially important to explain medical information on RDU and HL to older individuals in a clear and simple language so that it is fully comprehensible. In addition, providing trainings on HL and RDU in combination at all levels of education starting from the basic education level can ensure that individuals become aware of these conditions from an early age, become more conscious, and have better health perception. This can prevent individuals from developing chronic diseases at an early age.

Chronic diseases play an important role in the global burden of disease. Preventive and rehabilitative activities for chronic diseases are very important in reducing this burden. In this regard, all healthcare professionals, especially nurses, who are the backbone of the healthcare system, have a responsibility. Measuring the rational drug use behaviors and health literacy skills of individuals with chronic diseases, determining the factors affecting them, and then implementing nursing interventions to improve these behaviors and skills will make important contributions to the more effective management of chronic diseases.

Conclusion

In conclusion, as HL level increases, the level of RDU knowledge also increases in individuals with chronic diseases. RDU knowledge levels of individuals with chronic diseases are affected by the variables of HL level and health status perception. In line with these results, trainings, seminars and awareness-raising activities can be conducted for individuals with chronic diseases to increase their HL and RDU knowledge levels at the same time. In addition, trainings such as disease management and recognition of symptoms and side effects can improve their health status perceptions. Further studies can be planned with larger sample groups including different factors that are believed to be predictors of RDU knowledge of individuals with chronic diseases.

Limitations

The study has limitations. The results can be generalized to individuals with chronic diseases who presented to the family health centers where the study was conducted. In addition, self-report scales were used in this study, and the answers only reflect the reality to the extent of the interest and concentration levels of the individuals in the study group. However, explaining the findings using advanced statistical analyses is a strength of the study.

Declarations

Authors Disclosure (Conflict of Interest) Statement

The author does not declare any conflict of interest.

Funding Statement

The author does not declare any funding.

Ethics Approval

Ethical approval (Date/Number: 2020/12) was obtained from the ethical committee of a university.

References

1. World Health Organization. Rational use of medicines: progress in implementing the WHO medicines strategy report by the Secretariat, Executive Board 118/6. 2006. Accessed: 2023-11-10, https://apps.who.int/gb/ebwha/pdf_files/EB118/B118_6-en.pdf
2. Demirtaş Z, Dağtekin G, Sağlan R, et al. Validity and reliability of rational drug use scale. Eskişehir Turkish World Application and Research Center Public Health Journal. 2018;3(3):37-46. Accessed: 2020-01-02, https://dergipark.org.tr/tr/download/article-file/573814
3. Çifçi S, Bayram Değer V and Ulutaşdemir N. Evaluation of attitudes and knowledge levels of university employess towards rational drug use and health perception. Gümüşhane University Journal of Health Sciences. 2021;10(4):943-54. DOI: https://doi.org/10.37989/gumussagbil.944850
4. Alp F and Aslan Y. The relationship between rational drug use and health literacy: A meta-analysis study. 7th İnternational 17th National Health And Disease Management Congress Abstract And Full Text Proceedings Book; 2024. p.288-98. Accessed: 2025-02-17, https://l24.im/WIAfsjY
5. World Health Organization. Health literacy the solid facts. 2013. Accessed: 2023-11-09, https://www.who.int/europe/publications/i/item/9789289000154
6. Yiğitalp G, Bayram Değer V and Çifçi, S. Health literacy, health perception and related factors among different ethnic groups: a cross-sectional study in southeastern Turkey. BMC Public Health. 2021;21:1109. DOI: https://doi.org/10.1186/s12889-021-11119-7
7. Shahid R, Shoker M, Chu LM, et al. Impact of low health literacy on patients' health outcomes: a multicenter cohort study. BMC Health Services Research. 2022;22(1):1148. DOI: https://doi.org/10.1186/s12913-022-08527-9
8. Akpınar CV, Mandıracıoğlu A, Ozvurmaz S. et al. Adherence to treatment and health literacy of individuals with chronic diseases in a rural area. Ege Medical Journal. 2023;62(3):406-17. Accessed: 2025-02-20, http://egetipdergisi.com.tr/en/download/article-file/3409804
9. Zou H, Liu J, Jiang D, et al. The effect of health literacy on disease management self-efficacy in chronic disease patients: the mediating effects of social support and the moderating effects of ıllness perception. Patient Prefer Adherence. 2024;18:657-66. DOI: https://doi.org/10.2147/PPA.S447320
10. Kinoshita S, Hirooka N, Kusano T, et al. Does health literacy influence health-related lifestyle behaviors among specialists of health management? A cross-sectional study. BMC Primary Care. 2024;25(1):29. DOI: https://doi.org/10.1186/s12875-024-02263-1
11. Abacıgil F, Gürsoy Turan S, Adana F, et al. Rational use of drugs among ınpatients and ıts association with health literacy. Meandros Medical And Dental Journal. 2019;20:64-73. Accessed: 2020-01-03, https://www.researchgate.net/publication/332752275_Rational_Use_of_Drugs_Among_Inpatients_and_Its_Association_with_Health_Literacy
12. Güner TA, Kuzu A and Bayraktaroğlu T. The relationship between health literacy and rational drug use in ındividuals with diabetes. Turkish Journal of Diabetes and Obesity. 2020;4(3):214-23. DOI: https://doi.org/10.25048/tudod.775075
13. American Thoracic Society. Health Status, Health Perceptions. 2007. Accessed: 2023-11-13, https://qol.thoracic.org/sections/key-concepts/health-status-health-perceptions.html
14. Özişli Ö. Field research on the relationship between smart drug utilization and health perceptıon. International Journal of Social and Humanities Sciences Research. 2023;10(94):981-86. DOI: https://doi.org/10.26450/jshsr.3629
15. İncesu E. Rational use in drug health literacy: A public hospital patients on an investigation. Health Academicians Journal. 2017;4(1):28-38. Accessed: 2023-01-07, https://dergipark.org.tr/tr/download/article-file/752001
16. Şengül BN and Akyıl MŞ. Investigation of rational drug use and health perception in different generations. Journal of Nursing Science. 2022;5(3):169-78. DOI: https://doi.org/10.54189/hbd.1203565
17. Yasa, R. Health literacy in chronic patients and its effect on rational drug use. Current Health Management. 2023;1(1):16-23. Accessed: 2025-02-20, https://dergipark.org.tr/en/download/article-file/3599570
18. Esin MN. Sampling. In: Erdoğan S, Nahcivan N, Esin MN., eds. Research in nursing process, application and critical (167-192). İstanbul: Nobel Tıp Kitabevleri; 2018. p.167-92.
19. Aras Z and Bayık Temel A. Evaluation of validity and reliability of the turkish version of health literacy scale. Florence Nightingale Journal of Nursing. 2017;25(2):85-94. Accessed: 2020-01-02, https://dergipark.org.tr/tr/pub/fnjn/issue/30823/333466
20. Seçer İ. Practical data analysis with SPSS and LISREL analysis and reporting. Ankara: Anı Yayıncılık; 2017.
21. Büyüköztürk Ş. Data analysis handbook for social sciences statistics, Research design SPSS applications and interpretation. Ankara: Pegem Akademi; 2019.
22. Bozdemir E and Filiz M. Rational medicine use in Türkiye with the knowledge and attitudes towards systematic review of studies determination of behavior. Dicle University Journal of Social Sciences Institute. 2021;13(27):92-105. Accessed: 2022-01-07, https://dergipark.org.tr/tr/pub/diclesosbed/issue/63252/888820
23. Mamo DB and Alemu BK. Rational drug-use evaluation based on World Health Organization core drug-use indicators in a tertiary referral hospital, northeast Ethiopia: a cross-sectional study. Drug, Healthcare and Patient Safety. 2020;12:15–21. DOI: https://doi.org/10.2147/DHPS.S237021
24. Kaya SD, Kocaoglu M and Yüceler A. Health literacy and rational drug use in Türkiye: quantitative and qualitative approaches. Journal of Health Literacy. 2020:2(7):9-23. DOI: https://doi.org/10.22038/jhl.2022.64209.1277
25. World Health Organization. Promoting rational use of medicines. Accessed: 2023-05-13, https://www.who.int/activities/promoting-rational-use-of-medicines
26. Liu H, Wen Y, Wu C, et al. Exploring health literacy in patients with chronic diseases in Chongqing, China: a crosssectional study. BMJ Open. 2023;13:e064609. DOI: https://doi.org/10.1136/bmjopen-2022-064609
27. Beygi N, Behzadi S, Kargar L, et al. The relationship between health literacy and quality of life of elderlies with chronic diseases living in Fasa, Iran 2019. Archivos Venezolanos de Farmacologíay Terapéutica. 2021;40(8):753-62. DOI: https://doi.org/10.5281/zenodo.5787191
28. Lima ACP, Maximiano-Barreto MA, Martins TCR, et al. Factors associated with poor health literacy in older adults: A systematic review. Geriatric Nursing. 2024;55:242-54. DOI: https://doi.org/10.1016/j.gerinurse.2023.11.016
29. Deniz E and Duman İ. The relationship between e-health literacy and polypharmacy in elderly ındividuals. Journal of Geriatric Sciences. 2024;7(3):195-205. DOI: 10.47141/geiatrik.
30. Masumoto S, Yamakawa T, Sakamoto N, et al. Association between health literacy and medication comprehension; attitudes toward reporting adverse events in adults using over-the-counter medicines. Journal of Pharmaceutical Policy and Practice. 2023;16(90):1-7. DOI: https://doi.org/10.1186/s40545-023-00596-3