TURKISH JOURNAL OF CARDIOVASCULAR NURSING

Official journal of the TURKISH SOCIETY OF CARDIOLOGY

Turkish Journal of Cardiovascular Nursing

The Relationship Between Health Literacy, Disease Perception and Medication Adherence in Patients with Heart Failure

Kalp Yetersizliği Olan Hastalarda Sağlık Okuryazarlığının Hastalık Algısı ve İlaç Uyumu ile İlişkisi

ABSTRACT

Objective: This study investigated the relationship between health literacy levels, disease perception, and medication adherence in patients with heart failure.

Methods: This study adopted a descriptive-correlational research design. It was conducted between August 1, 2021, and March 30, 2022. The sample consisted of 165 patients treated at a university hospital for heart failure. Data were collected by the researcher using a Personal Information Form, the Health Literacy Scale (HLS), the Brief Illness Perception Scale (BIPS), the Medication Compliance Reporting Scale (MCRS), and a face-to-face survey method. Mann-Whitney U, Kruskal-Wallis, and Pearson Correlation analysis were used to analyze the data.

Results: Participants had a mean age of 61.40 ± 2.07 years. Most participants were married (90.3%). Over half of the participants were women (59.4%). Participants had a mean HLS score of 87.67 ± 18.59, a mean BIPS score of 43.76 ± 9.03, and a mean MCRS score of 22.84 ± 3.03. There was a moderate negative correlation between HLS and BIPS scores. There was a moderate positive correlation between HLS and MCRS scores ($P < 0.01$).

Conclusion: Participants had low health literacy levels, medication compliance, and disease perception. However, they had positive attitudes toward medication compliance and disease perception. It is recommended to plan experimental studies to increase the health literacy levels and awareness of patients with heart failure.

Keywords: Health literacy, heart failure, illness perception, medication adherence

ÖZ

Amaç: Bu araştırma; kalp yetersizliği olan hastaların sağlık okuryazarlık düzeylerinin hastalık algısı ve ilaç uyumu arasındaki ilişkiyi belirlemek amacıyla yapılmıştır.

Yöntem: Bu çalışma tanımlayıcı ilişki arayıcı türde tasarlanmış olup 1 Ağustos 2021-30 Mart 2022 tarihleri arasında gerçekleştirilmiştir. Bir üniversite hastanesinde kalp yetersizliği tanısı ile tedavi alan 165 hasta ile çalışma yürütülmüştür. Veriler Kişisel Bilgi Formu, Sağlık Okuryazarlığı Ölçeği, Kısa Hastalık Algısı Ölçeği ve İlaç Uyumunu Bildirim Ölçeği ile araştırmacı tarafından yüzyüze anket yöntemi kullanılarak toplanmıştır. Verilerin analizinde Mann Whitney U, Kruskall Wallis ve Pearson Korelasyon analizi kullanılmıştır.

Bulgular: Hastaların yaş ortalaması 61,40 ± 2,07 olup, %90,3'ü evli, %59,4'ü erkektir. Hastaların Sağlık Okuryazarlığı Ölçeği puan ortalaması 87,67 ± 18,59, Kısa Hastalık Algısı Ölçeği puan ortalaması 43,76 ± 9,03, İlaca Uyum Ölçeği puan ortalaması ise 22,84 ± 3,03 olarak belirlenmiştir. Sağlık Okuryazarlığı Ölçeği ile Kısa Hastalık Algısı Ölçeği puan ortalaması arasında negatif yönde orta düzeyde; Sağlık Okuryazarlığı Ölçeği ile İlaç Uyumunu Bildirim Ölçeği puan ortalaması arasında pozitif yönde orta düzeyde bir ilişki olduğu belirlenmiştir ($P < 0,01$).

Sonuç: Çalışmaya katılan hastaların sağlık okuryazarlık düzeylerinin, ilaca uyumlarının ve hastalık algılarının düşük olduğu tespit edilmiştir. Sağlık okuryazarlığı yüksek olan hastaların ilaca uyumları ve hastalık algıları olumlu yönde şekillenmektedir. Kalp yetersizliği olan hastaların sağlık okuryazarlığı düzeylerinin ve farkındalıklarının artırılmasına yönelik deneysel çalışmaların planlanması önerilmektedir.

Anahtar Kelimeler: Sağlık okuryazarlığı, kalp yetersizliği, hastalık algısı, ilaca uyum

ORIGINAL ARTICLE

Introduction

Heart failure is a health issue characterized by a high rate of morbidity and mortality, ranking as the leading chronic disease globally and in Türkiye.[1,2] In recent

*This research was presented as an oral presentation at the "2nd International Eurasia Health Science Congre" held between June 15-16, 2023.

Gizem Ekenler[1]
Büşra Altınel[2]

[1] Department of Public Health Nursing, Institute of Health Sciences Selcuk University, Konya, Türkiye
[2] Department of Public Health Nursing, Faculty of Nursing Selcuk University, Konya, Türkiye

Corresponding author:
Büşra Altınel
✉ busraaltinel@gmail.com

Received: October 10, 2024
Accepted: May 25, 2024

Cite this article as: Ekenler G, Altınel B. The relationship between health literacy, disease perception and medication adherence in patients with heart failure. *Turk J Cardiovasc Nurs* 2024;15(37): 104-109.

DOI: 10.5543/khd.2024.05668

years, advancements in technology have led to significant developments within health services. These advancements have contributed to a reduction in deaths and an extension of life expectancy in chronic conditions such as coronary artery diseases, myocardial infarction, hypertension, and diabetes mellitus. However, a consequence of these positive trends is the rise in the incidence of heart failure.[3]

More than six million adults in the United States have heart failure.[4] Research shows that this number will rise by 46 percent by 2030, resulting in more than eight million people with heart failure.[5,6] In Türkiye, about two million adults have heart failure, with a prevalence of 6.9%.[7]

While current treatments cannot completely cure heart failure, they can manage it effectively. Moreover, effective disease management mitigates the adverse effects of heart failure.[8,9] Health literacy is a critical component of heart failure management.[10] Research shows that people with low health literacy have more cardiovascular comorbidities[11] and higher cardiovascular disease risk scores[12] than those with high health literacy.

Patients with heart failure tend to adhere better to treatment during the acute phase of their disease but often struggle with adherence in the chronic phase. Over time, patients may experience a loss of control, leading to anxiety and depression. Those with high disease perception are better at managing emotional turmoil and controlling the disease compared to those with low disease perception.[13]

Patients with low health literacy have difficulty adhering to medications, accessing preventive health services, understanding their condition, and caring for themselves. Low health literacy leads to high healthcare costs and increased mortality rates.[14-16] It also results in low medication adherence and issues associated with polypharmacy.[17]

Health literacy holds significant importance for patients with heart failure,[2] which is one of the most prevalent chronic diseases.[18] Health literacy directly affects how patients manage their diseases. Effective disease management positively impacts patients' perceptions of the disease. Positively altering the perception of the disease can contribute to an improved sense of well-being among patients.[19] A successful treatment process in heart failure depends on individuals' desire and ability to carry out their own care activities.[20] Therefore, it is important for patients to know the side effects of their treatment regimens and have sufficient information about how to use their medications.[21] Research shows that individuals with insufficient health literacy are inadequate in chronic disease management and have poor compliance with treatment.[22,23] This study was conducted to determine the relationship between health literacy levels, disease perception, and medication adherence in patients with heart failure.

Materials and Methods

Study Design

This descriptive and correlational study was conducted between August 1, 2021, and March 30, 2022.

Population and Sample

The study population consisted of all patients treated for heart failure in the cardiology clinic of a university hospital in the Central Anatolia Region of Türkiye. According to hospital statistics, 238 patients were hospitalized due to heart failure in 2020. A power analysis (G*power 3.0.10) was performed to determine the sample size. The results indicated that a sample of 165 would be sufficient to detect significant differences (0.283 effect size, 95% power, and 95% confidence interval).[24] Participants were recruited using random sampling, a non-probability sampling method.

Inclusion Criteria

(1) Being 18 to 65 years of age, (2) having had heart failure for at least six months, (3) being literate.

Exclusion Criteria

(1) having communication problems, (2) having a mental disorder.

Measures

Patient Information Form

The patient information form was prepared by the researchers.[25,26] It consisted of 13 questions. Seven questions addressed sociodemographic characteristics (age, gender, marital status, educational status, economic status, smoking status, and alcohol use status), while six questions addressed health-disease characteristics (health perception, duration of heart failure diagnosis, accompanying chronic disease status, number of hospitalizations, number of medications used daily, and regular health check-ups).

Health Literacy Index

The Health Literacy Survey in Europe (HLS-EU) is a 47-item measure developed by Sorensen, Van den Broucke, and Pelikan.[27] Toçi, Bruzari, and Sorenson[28] simplified the HLS-EU and developed the HLI. The Health Literacy Index (HLI) consists of 25 items rated on a five-point Likert-type scale. The index has four subscales, and the total score ranges from 25 to 125, with higher scores indicating higher health literacy. The index was adapted to Turkish by Aras and Bayık Temel.[29] The Turkish version has a Cronbach's alpha of 0.92,[29] which was 0.93 in the present study.

Brief Illness Perception Questionnaire

Brief Illness Perception Questionnaire (B-IPQ) was developed by Broadbent et al[30] The original questionnaire consists of nine open-ended questions. The questionnaire was adapted to Turkish by Karataş et al[31] The Turkish version consists of eight questions and two subscales. Item 8 is an open-ended question that addresses the causal factors of disease, asking the respondent to state the three most important reasons they think cause the disease. The other seven items are rated on a ten-point Likert-type scale. Higher scores indicate higher perceptions of health threats. The Turkish version has a Cronbach's alpha of 0.85 [31], which was 0.76 in the present study.

Medication Adherence Report Scale

Medication Adherence Report Scale (MARS) was developed by Horne and Weinman (1999). The instrument consists of five items rated on a five-point Likert-type scale. The total score ranges

from 5 to 25, with higher scores indicating higher medication adherence. The scale was adapted to Turkish by Temeloğlu Şen et al[32] The Turkish version has a Cronbach's alpha of 0.78 [32], which was 0.92 in the present study.

Data Analysis

The data were analyzed using the Statistical Package for Social Sciences (SPSS, v.23) at a significance level of 0.05. Descriptive statistics (percentage, frequency, mean, and standard deviation) were used to summarize the data. Normality was tested using the Kolmogorov-Smirnov and Shapiro-Wilk tests, which showed that the data were non-normally distributed. Consequently, the Kruskal-Wallis and Mann-Whitney U tests were used for analysis. The relationship between scale scores was analyzed using Pearson's correlation coefficient.

Ethical Considerations

The study was approved by the Non-Interventional Clinical Research Ethics Committee of Selçuk University (Approval Number: 2021/53, Date: 16.06.2021,). Permission was obtained from the hospital. Written consent was obtained from all participants. The research was conducted in accordance with the Declaration of Helsinki.

Results

Participants had a mean age of 61.40 ± 2.07 years. More than half of the participants were women (59.4%). Most participants were married (90.3%). Less than half of the participants had primary or secondary school degrees (44.2%). Less than half of the participants had a moderate economic status (42.2%). Less than half of the participants were smokers (44.2%). More than a quarter of the participants had quit drinking alcohol (39.4%) (Table 1).

Participants had been living with heart failure for an average of 4.38 ± 1.66 years. They had been hospitalized an average of 5.25 ± 5.12 times due to heart failure. They took an average of 4.65 ± 1.88 medications daily. One in three participants had poor health perceptions (33.9%). Most participants had chronic diseases in addition to heart failure (95.8%). The majority of the participants visited their doctors regularly for check-ups (Table 2).

Participants had a total mean HLI score of 87.67 ± 18.59. They had mean HLI subscale scores of 18.38 ± 5.86 for "accessing information," 22.80 ± 5.66 for "understanding information," 28.61 ± 5.81 for "appraising information," and 17.87 ± 5.22 for "applying

Table 1. Sociodemographic Characteristics of the Participants

Sociodemographic characteristics	$\bar{X}$ ± SD	Min-Max	
Age (year)	61.40 ± 2.07	57-64	
		n	%
Gender	Woman	98	59.4
	Man	67	40.6
Marital status	Married	149	90.3
	Single	16	9.7
Education (degree)	Literate	35	21.3
	Primary/Secondary school	73	44.2
	High school or higher education	57	34.5
Economic status	High	42	25.5
	Moderate	70	42.4
	Low	53	32.1
Tobacco use	Never	43	26.1
	Quit	49	29.7
	Yes	73	44.2
Alcohol use	Never	87	52.7
	Quit	65	39.4
	Yes	13	7.9

SD, Standart Deviation; Min, Minimum; Max, Maximum

Table 2. Health-Disease Characteristics of the Participants

Variables	$\bar{X}$ ± SD	Min-Max	
Diagnosis with heart failure (year)	4.38 ± 1.66	1-8	
Hospitalization for heart failure	5.25 ± 5.12	1-30	
Number of medicines per day	4.65 ± 1.88	2-14	
		n	%
Health perception	Good/Neither good nor bad	109	66.1
	Bad	56	33.9
Other chronic diseases	Yes	158	95.8
	No	7	4.2
Regular visits for check-ups	Yes	141	85.5
	No	24	14.5

SD, Standart Deviation; Min, Minimum; Max, Maximum

Table 3. Distribution of Mean Scores of Patients with Heart Failure from the Scales

Scales and Subscales	$\bar{X}$ ± SD	Median (Min-Max)	Q1-Q3
HLI	87.67 ± 18.59	88 (25-123)	74-102
Accessing information	18.38 ± 5.86	20 (5-25)	15-24
Understanding information	22.80 ± 5.66	22 (7-35)	19-26.50
Appraising information	28.61 ± 5.81	29 (8-40)	26-32
Applying information	17.87 ± 5.22	19 (5-25)	14-22
B-IPQ	43.76 ± 9.03	43 (26-63)	37-51
Cognitive	18.81 ± 4.18	19 (9-27)	16-22
Affective	24.95 ± 7.71	26 (10-39)	18-32
MARS	22.84 ± 3.03	24 (11-25)	21-25

SD, Standart Deviation; Min, Minimum; Max, Maximum

Table 4. Correlations between Scale Scores

	1	2	3	4	5	6	7
HLI	1						
Accessing information	0.777**	1					
Understanding information	0.902**	0.748**	1				
Appraising information	0.933**	0.590**	0.799**	1			
Applying information	0.670**	0.176*	0.399**	0.679**	1		
B-IPQ	-0.670**	-0.531**	-0.593**	-0.574**	-0.509**	1	
MARS	0.307**	0.148	0.244**	0.268**	0.364**	-0.440**	1

r: Pearson's correlation, *P < 0.05, **P < 0.01.

information." They had a total mean B-IPQ score of 43.76 ± 9.03, with mean subscale scores of 18.81 ± 4.18 for "cognitive" and 24.95 ± 7.71 for "affective." Additionally, participants had a total mean MARS score of 22.84 ± 3.03 (Table 3).

There was a moderate negative correlation between HLI and B-IPQ scores. There was a weak positive correlation between HLI and MARS scores (P < 0.01). Additionally, there was a weak negative correlation between B-IPQ and MARS scores (P < 0.01) (Table 4).

Discussion

Participants had a total mean HLI score of 87.67 ± 18.59, indicating that they had little to some difficulty with health literacy. Cajita, Cajita, and Han (2016) reported that the prevalence of low health literacy among patients with heart failure ranged from 17.5% to 97%. They also noted that two in five patients with heart failure had low health literacy (39%).[23] Oscalices et al[34] documented that nine in ten Brazilian patients with heart failure had low health literacy (89%). On the other hand, Chen, Tsai, and Chou[35] found that three in ten American patients with heart failure had inadequate health literacy (28.5%). Teleş and Kaya[36] reported that three in five Turkish patients with heart failure had inadequate health literacy (58.1%). The results of the present study are consistent with the literature.[37,38] The difference in results may be due to variations in developmental levels, sociocultural backgrounds, and education levels. Age and education significantly affect health literacy levels.[39,40] The results of the present study may be explained by the fact that most of our participants were older than 60 and had primary or secondary school education.

Participants had the highest HLI scores in the "accessing information" subscale and the lowest in the "understanding information" subscale. Impaired cognitive function due to heart failure adversely affects health literacy because it causes patients to have difficulty understanding health-related information.[41] The HLI "accessing information" subscale addresses how patients can access information regarding diseases, treatments, risks (smoking, obesity, etc.), and healthy diets. Participants likely had a high mean HLI "accessing information" score because advances in technology have made accessing information much easier than in the past.

The HLI "understanding information" subscale focuses on understanding the content of package inserts, food labels, medical prescriptions, and brochures about health hazards, dangerous behaviors, and the importance of a healthy lifestyle and environmental health. Participants had a low mean HLI "understanding information" subscale score, suggesting they had difficulty comprehending key health literacy statements. This difficulty is probably due to their low education levels or cognitive impairment caused by heart failure.

Participants had a mean B-IPQ score of 43.76 ± 9.03, indicating that they regarded heart failure as a threat.[31] Although researchers have investigated the relationship between heart failure and disease perception,[25,42] they have not used the B-IPQ. Therefore, we compared our results with studies that used different measures to assess chronic diseases and disease perception.

Participants had mean B-IPQ "cognitive" and "affective" subscale scores of 24.95 ± 7.71 and 18.81 ± 4.18, respectively, suggesting that they had higher affective disease perception than cognitive disease perception. Researchers studying patients with rheumatoid arthritis and irritable bowel syndrome have reported similar results.[43,44]

Participants had high medication adherence. In contrast, Dayapoğlu and Yildiz[20] reported that patients with heart failure had low medication adherence. Factors such as gender, age, and education affect medication adherence.[45] The differences in our study's results may be due to the varying influences of these factors on our participants' medication adherence.

There was a moderate negative correlation between HLI and B-IPQ scores (P < 0.01), indicating that participants with higher health literacy were less likely to view heart failure as a threatening disease than those with lower health literacy. This result underscores the importance of health literacy in disease management. No researchers have investigated the relationship between health literacy and disease perception among patients with heart failure. However, Park and Seo[46] recruited 52 Korean-American adults with diabetes to investigate the relationship between health literacy, disease perception, and self-care. They did not find a significant correlation between health literacy and disease perception. This discrepancy may be due to cultural differences.

Bayık Temel and Çimen[37] and Akça, Gökyıldız Sürücü, and Akbaş[47] focused on Turkish patients and documented a significant correlation between health literacy and health

perception. Although health perception and illness perception are not interchangeable concepts, they are closely related. Our results are consistent with earlier research in Türkiye.

There was a moderate positive correlation between HLI and MARS scores ($P < 0.01$), suggesting that participants with higher health literacy were more likely to adhere to their medications than those with lower health literacy. In contrast, Wong, Velasquez, Powe, and Tuot[48] did not find a correlation between health literacy and medication adherence among American patients with chronic renal failure. The differing results may be due to variations in educational levels and cultural backgrounds of the patient groups recruited. Tad[49] found that health literacy affected medication adherence among patients with hypertension.

Limitations

This study was conducted in a single clinic; therefore, the results cannot be generalized to patients receiving care in other settings or locations. Although the sample size was relatively small, it was not significantly different from earlier research.

Conclusion

Participants had little to some difficulty with health literacy, with the lowest scores in "understanding information" and the highest in "accessing information." They had negative perceptions of heart failure and demonstrated higher affective disease perceptions than cognitive disease perceptions. Medication adherence was relatively high. Participants with higher health literacy were less likely to view heart failure as a threat and more likely to adhere to their medications.

In line with these results, healthcare professionals should plan and implement training programs to help patients with heart failure develop health literacy, enhancing the health education (disease information, medication use, etc.) provided to these patients in healthcare institutions. Researchers should recruit larger samples to investigate the causes of negative disease perception, inadequate health literacy, and low medication adherence. Experts should plan protective health services and experimental studies to raise patients' awareness of health literacy.

Ethics Committee Approval: The study was approved by the Non-Interventional Clinical Research Ethics Committee of Selçuk University (Approval Number: 2021/53, Date: 16.06.2021).

Informed Consent: Written consent was obtained from all participants.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – G.E., B.A.; Design – G.E., B.A.; Supervision – G.E., B.A.; Materials – G.E.; Data Collection and/or Processing – G.E.; Analysis and/or Interpretation – G.E., B.A.; Literature Review – G.E., B.A.; Writing – G.E., B.A.; Critical Review – G.E., B.A.

Use of AI for Writing Assistance: Artificial intelligence assisted technologies were not used in the writing of this article.

Acknowledgments: Thank you to all participants.

Declaration of Interest: The authors have no conflicts of interest to declare.

Funding: The authors declared that this study received no financial support.

Etik Komite Onayı: Çalışma Selçuk Üniversitesi Girişimsel Olmayan Klinik Araştırmalar Etik Kurulu tarafından onaylandı (Onay Numarası: 2021/53, Tarih: 16.06.2021).

Bilgilendirilmiş Onam: Tüm katılımcılardan yazılı onam alındı.

Hakem değerlendirmesi: Dış-bağımsız.

Yazar Katkıları: Fikir – G.E., B.A.; Tasarım – G.E., B.A.; Denetleme – G.E., B.A.; Malzemeler – G.E.; Veri Toplanması ve/veya İşlemesi - G.E.; Analiz ve/veya Yorum – G.E., B.A.; Literatür Taraması – G.E., B.A.; Yazan – G.E., B.A.; Eleştirel İnceleme – G.E., B.A.

Yazma Yardımı için Yapay Zeka Kullanımı: Bu makalenin yazımında yapay zeka destekli teknolojiler kullanılmamıştır.

Teşekkür: Tüm katılımcılara teşekkür ederiz.

Çıkar Çatışması: Yazarların beyan edecekleri herhangi bir çıkar çatışması yoktur.

Finansal Destek: Yazarlar bu çalışmanın herhangi bir finansal destek almadığını beyan etmişlerdir.

References

1. Yancy CW, Jessup M, Bozkurt B, et al. 2013 ACCF/AHA guideline for the management of heart failure: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol*. 2013;62(16):e147-e239. [CrossRef]
2. Benjamin EJ, Virani SS, Callaway CW, et al. Heart disease and stroke statistics–2018 Update: a report from the American Heart Association. *Circulation*. 2018;137(12):e67-e492. [CrossRef]
3. Tokgözoğlu L, Yılmaz MB, Abacı A, et al.,eds. Türkiye'de Kalp Yetersizliği Yol Haritası. Türk Kardiyoloji Derneği. 2015:1-31.
4. Virani SS, Alonso A, Benjamin EJ, et al. Heart disease and stroke statistics–2020 Update: a report from the American Heart Association. *Circulation*. 2020;141(9):e139-e596. [CrossRef]
5. Heidenreich PA, Albert NM, Allen LA, et al. Forecasting the impact of heart failure in the United States: a policy statement from the American Heart Association. *Circ Heart Fail*. 2013;6(3):606-619. [CrossRef]
6. Mozaffarian D, Benjamin EJ, Go AS, et al. Heart disease and stroke statistics–2016 Update. *Circulation*. 2016;133(4):e38-e360. [CrossRef]
7. Değertekin M, Erol C, Ergene O, et al. Türkiye'deki kalp yetersizliği prevalansı ve öngördürücüleri: HAPPY çalışması. *Türk Kardiyol Dern Arş*. 2012;40(4):298-308. [CrossRef]
8. İncirkuş K, Nahcivan NÖ. Kronik hastalık yönetimi için bir rehber: kronik bakım modeli. *FNHemDerg*. 2015;23(1):66-75. [CrossRef]
9. Mert H, Barutcu CD, Kalp Yetersizliğinde Palyatif Bakım Palliative care in heart Failurea. *TAF Prev Med Bull*. 2012;11(2):219-224. [CrossRef]
10. Fabbri M, Murad MH, Wennberg Alexandra M, et al. Health literacy and outcomes among patients with heart failure. *JACC Heart Fail*. 2020;8(6):451-460. [CrossRef]
11. Ghisi GLM, Chaves GSDS, Britto RR, Oh P. Health literacy and coronary artery disease: a systematic review. *Patient Educ Couns*. 2018;101(2):177-184. [CrossRef]

12. Lindahl B, Norberg M, Johansson H, et al. Health literacy is independently and inversely associated with carotid artery plaques and cardiovascular risk. *Eur J Prev Cardiol*. 2020;27(2):209-215. [CrossRef]
13. Moradi M, Daneshi F, Behzadmehr R, Rafiemanesh H, Bouya S, Raeisi M. Quality of life of chronic heart failure patients: a systematic review and meta-analysis. *Heart Fail Rev*. 2020;25(6):993-1006. [CrossRef]
14. Macabasco-O'Connell A, DeWalt DA, Broucksou KA, et al. Relationship between literacy, knowledge, self-care behaviors, and heart failure-related quality of life among patients with heart failure. *J Gen Intern Med*. 2011;26(9):979-986. [CrossRef]
15. Mancuso JM. Health literacy: a concept/dimensional analysis. *Nurs Health Sci*. 2008;10(3):248-255. [CrossRef]
16. Tokuda Y, Doba N, Butler JP, Paasche-Orlow MK. Health literacy and physical and psychological wellbeing in Japanese adults. *Patient Educ Couns*. 2009;75(3):411-417. [CrossRef]
17. Wolf MS, Curtis LM, Wilson EAH, et al. Literacy, cognitive function, and health: results of the LitCog study. *J Gen Intern Med*. 2012;27(10):1300-1307. [CrossRef]
18. Doyle G, Cafferkey K, Fullam J. The European Health Literacy Survey: Results from Ireland. Accessed June 5, 2024. https://www.researchgate.net/profile/Kenneth-Cafferkey/publication/281629581_The_European_Health_Literacy_Survey_Results_from_Ireland/links/55f11b5b08aef559dc46f2c4/The-European-Health-Literacy-Survey-Results-from-Ireland.pdf.
19. Yorulmaz H, Tatar A, Saltukoğlu G, Soylu G. Diyabetli hastalarda hastalık algısını etkileyen faktörlerin incelenmesi. *FSM İlmî Araştırmalar İnsan Toplum Bilimleri Derg*. 2013;2:367-387.
20. Dayapoğlu N, Yildiz E. Kronik kalp yetersizliği olan hastaların ilaca uyum, diyete uyum ve bireysel izlem hakkındaki inançlarının incelenmesi. *MN Kardiyol*. 2017;24(2):78-83.
21. Sezgin D, Hatice M. Kalp yetersizliği olan bireylerin hemşirelik bakımında kanıta dayalı yaklaşımlar. *Dokuz Eylül Univ Hemşirelik Fak Electron Derg*. 2015;8(2):108-118.
22. Raingruber B. Contemporary Health Promotion in Nursing Practice. Massachusetts, U S: Jones & Bartlett Publishers; 2014:1-24.
23. World Health Organization, 2016. The mandate of health literacy. Available at: https://www.who.int/healthpromotion/conferences/9gchp/health-literacy/en/. Accessed October 12, 2021
24. Kara DD, Mert E, Uysal Y, Başhan İ. Evaluation of medication adherence in adults who use multiple medications in the context of illness perception, acknowledgement and attitude characteristics. *Turk J Fam Med Prim Care*. 2017;11(4):227-234. [CrossRef]
25. Tekin H, Polat Ü. Kalp yetmezliği olan hastaların hastalık algısı ve bakımlarına ilişkin görüşlerinin değerlendirilmesi. *Genel Tip Derg*. 2018;28(1):14-22. [CrossRef]
26. Çevik S, Özden G, Çıtlık Sarıtaş S. E-sağlık okuryazarlığı ile kalp yetersizliği özbakımında bakım veren katkısı arasındaki ilişki. *JAREN*. 2020;6(3):476-482.
27. 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;13:948. [CrossRef]
28. Toçi E, Burazeri G, Sorensen K, et al. Health literacy and socioeconomic characteristics among older people in transitional Kosovo. *J Adv Med Med Res*. 2013;3:1646-1658. [CrossRef]
29. Aras Z, Bayık Temel A. Sağlık okuryazarlığı ölçeğinin türkçe formunun geçerlilik ve güvenirliğinin değerlendirilmesi. *FNHemDerg*. 2017;25(2):85-94. [CrossRef]
30. Broadbent E, Petrie KJ, Main J, Weinman J. The brief illness perception questionnaire. *J Psychosom Res*. 2006;60(6):631-637. [CrossRef]
31. Karataş T, Özen Ş, Kutlutürkan S. Factor structure and psychometric properties of the brief illness perception questionnaire in Turkish cancer patients. *Asia Pac J Oncol Nurs*. 2017;4(1):77-83. [CrossRef]
32. Temeloğlu Şen E, Sertel Berk HÖ, Sindel D. İlaç uyumunu bildirim ölçeği'nin türkçe uyarlamasının geçerlik ve güvenirlik çalışması. *Istanb Tip Fak Derg*. 2019;82(1):52-61. [CrossRef]
33. Cajita MI, Cajita TR, Han HR. Health literacy and heart failure: a systematic review. *J Cardiovasc Nurs*. 2016;31(2):121-130. [CrossRef]
34. Oscalices MIL, Okuno MFP, Lopes MCBT, Batista REA, Campanharo CRV. Health literacy and adherence to treatment of patients with heart failure. *Rev Esc Enferm USP*. 2019;53:e03447. [CrossRef]
35. Chen SL, Tsai JC, Chou KR. Illness perceptions and adherence to therapeutic regimens among patients with hypertension: a structural modeling approach. *Int J Nurs Stud*. 2011;48(2):235-245. [CrossRef]
36. Teleş M, Kaya S. Kardiyoloji polikliniğine başvuran hastalarda sağlık okuryazarlığının değerlendirilmesi. *Hacettepe Sağlık İdaresi Derg*. 2019;22(4):711-748.
37. Bayık Temel A, Çimen Z. Kronik hastalığı olan yaşlı bireylerde sağlık okuryazarlığı, sağlık algısı ve ilişkili faktörler. *Ege Univ Hemşirelik Fak Derg*. 2017;33(3):105-125.
38. Peterson PN, Shetterly SM, Clarke CL, et al. Health literacy and outcomes among patients with heart failure. *JAMA*. 2011;305(16):1695-1701. [CrossRef]
39. Sørensen K, Pelikan JM, Röthlin F, et al. Health literacy in Europe: comparative results of the European health literacy survey (HLS-EU). *Eur J Public Health*. 2015;25(6):1053-1058. [CrossRef]
40. Wu J-R, Moser DK, DeWalt DA, Rayens MK, Dracup K. Health literacy mediates the relationship between age and health outcomes in patients with heart failure. *Circ Heart Fail*. 2016;9(1):e002250. [CrossRef]
41. Goh FQ, Kong WKF, Wong RCC, et al. Cognitive impairment in heart failure—a review. *Biology*. 2022;11(2):179. [CrossRef]
42. Morgan K, Villiers-Tuthill A, Barker M, McGee H. The contribution of illness perception to psychological distress in heart failure patients. *BMC Psychol*. 2014;2(1):50. [CrossRef]
43. De Gucht V. Illness perceptions mediate the relationship between bowel symptom severity and health-related quality of life in IBS patients. *Qual Life Res*. 2015;24(8):1845-1856. [CrossRef]
44. Berner C, Erlacher L, Fenzl KH, Dorner TE. A cross-sectional study on self-reported physical and mental health-related quality of life in rheumatoid arthritis and the role of illness perception. *Health Qual Life Outcomes*. 2018;16(1):238. [CrossRef]
45. Riles EM, Jain AV, Fendrick AM. Medication adherence and heart failure. *Curr Cardiol Rep*. 2014;16(3):458. [CrossRef]
46. Park S, Seo Y. The relationships among health literacy, illness perception, and diabetes self-care in Korean-speaking immigrants with diabetes. *Clin Nurs Res*. 2022;31(7):1234-1240. [CrossRef]
47. Akça E, Gökyıldız Sürücü Ş, Akbaş M. Gebelerde sağlık algısı, sağlık okuryazarlığı ve ilişkili faktörler. *İnönü Univ Sağlık Hizmetleri Meslek Yüksekokulu Derg*. 2020;8(3):630-642. [CrossRef]
48. Wong KK, Velasquez A, Powe NR, Tuot DS. Association between health literacy and self-care behaviors among patients with chronic kidney disease. *BMC Nephrol*. 2018;19(1):196. [CrossRef]
49. Tad Sİ. Hipertansiyon Hastalarında Sağlık Okuryazarlığının Ilaç Tedavisine Uyum ve Yaşam Kalitesine Etkisi. Dissertation. Hacı Bektaş Veli Üniversitesi; 2021.