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The Relationship Between Medication Adherence and Health Literacy in Geriatric Patients

Geriatrik Hastalarda İlaç Uyumu ile Sağlık Okuryazarlığı Arasındaki İlişki

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ABSTRACT

Objective: The aim of this study was to investigate the relationship between medication compliance and health literacy in geriatric patients.

Methods: The population of this study consists of 207 patients aged 65 and over who applied to the outpatient clinics of a training and research hospital and a public hospital in a province in the Southeastern Anatolia Region. Data were collected using the "Structured Survey Form", "Medication Compliance Report Scale" and "Health Literacy Scale". the study, CFA was performed with IBM AMOS 21 to determine the structural validity of health literacy in individuals over the age of 65.

Results: The average age of the participants was 69.85 ± 4.87 years. It was determined that income level, health literacy and marital status increased medication compliance, but age did not show a significant relationship with medication compliance. A positive significant relationship was found between medication compliance and health literacy scale mean score.

Conclusion: These findings suggest that health literacy is a critical factor in medication adherence in geriatric patients. Educational programs aimed at improving health literacy levels are an important strategy to increase medication adherence in this population.

Keywords: Geriatric patients, medication compliance, health literacy

ÖZ

Amaç: Bu çalışmanın amacı geriatrik hastalarda ilaç uyumu ile sağlık okuryazarlığı arasındaki ilişkiyi araştırmaktır.

Yöntemler: Bu çalışmanın evrenini Güneydoğu Anadolu Bölgesi'ndeki bir ilde bulunan bir eğitim araştırma hastanesi ve bir kamu hastanesinin polikliniklerine başvuran 65 yaş ve üzeri 207 hasta oluşturmaktadır. Veriler "Yapılandırılmış Anket Formu", "İlaç Uyum Raporu Ölçeği" ve "Sağlık Okuryazarlığı Ölçeği" kullanılarak toplandı. Araştırmada 65 yaş üstü bireylerde sağlık okuryazarlığının yapısal geçerliliğini belirlemek amacıyla IBM AMOS 21 ile DFA yapılmıştır.

Bulgular: Katılımcıların yaş ortalaması 69,85 ± 4,87 yıldı. Gelir düzeyi, sağlık okuryazarlığı ve medeni durumun ilaç uyumunu arttırdığı ancak yaşın ilaç uyumu ile anlamlı bir ilişki göstermediği belirlendi. İlaç uyumu ile sağlık okuryazarlığı ölçeği puan ortalaması arasında pozitif yönde anlamlı bir ilişki bulunmuştur.

Sonuç: Bu bulgular, sağlık okuryazarlığının geriatrik hastalarda ilaca uyumda kritik bir faktör olduğunu göstermektedir. Sağlık okuryazarlığı düzeylerini iyileştirmeyi amaçlayan eğitim programları, bu popülasyonda ilaca uyumu artırmak için önemli bir stratejidir.

Anahtar Kelimeler: Geriatrik hastalar, ilaç uyumu, sağlık okuryazarlığı

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Introduction

The number and proportion of the elderly population in the world and in Türkiye are gradually increasing. In 2019, the number of people aged 60 and over was 1 billion. This number is estimated to reach 1.4 billion in 2030 and 2.1 billion in 2050 (WHO, 2022). In Türkiye, the proportion of the elderly population to the total population increased from 8.3 percent in 2016 to 9.7 percent in 2021. This ratio is expected to increase to 10.2 percent in 2023 and 20.8 percent in 2050 (Yavuz & Koç, 2023). With the increase in the elderly population, chronic diseases frequently observed in this age group and their treatments have become important. There are many factors affecting treatment compliance. These are: socioeconomic status, prevalence of fatalism, problematic and inadequate health literacy, and attitudes towards treatment (Akyol Güner et al., 2020). Health literacy is the ability the ability to provide patients with the ability to receive basic health information and health services and to evaluate and understand this information correctly (Hazer et al., 2019). Chronic diseases and cognitive and physical decline with advancing age increase the importance of health literacy. (Çiftci et al., 2023; Hazer et al., 2019). It has been determined that individuals with high health literacy have lower hospitalization rates and better disease outcomes than individuals with low health literacy. (Noumani et al., 2023). Poor health literacy is one of the challenges associated with poor medication adherence, as poor medication adherence in older adults creates an environment that exacerbates health problems associated with chronic health conditions (Mayo-Gamble & Mouton, 2018).Several research in the literature have looked at the link between health literacy and medication nonadherence.

While some studies have found a link between health literacy and prescription non-adherence, others have not, emphasizing the need for more study on this issue (Lee vd., 2017; Öztaş & Aslan Korkmaz, 2019).

The management of chronic diseases in geriatric patients is largely dependent on medication adherence, and medication non-adherence among geriatric patients is an important health problem. Medication non-adherence is known to increase hospital admission rates and increase health expenditure (Yoon et al., 2023). Health literacy enables older individuals to be more aware of their symptoms, locate appropriate health institutions, hospitals, and clinics, and access these facilities. Thus, health literacy allows elderly persons to comprehend treatment approaches and utilize medication effectively/correctly (Öztaş & Aslan Korkmaz, 2019).

This situation indirectly affects geriatricians and healthcare professionals (El-Sayed et al., 2023). By evaluating the relationship between treatment adherence and the health literacy levels of geriatric patients, these results will be reflected in the education and treatment strategies of patients. In this direction, the aim of this study was to determine the relationship between treatment adherence and the health literacy of geriatric patients.

Methods

Study design and participants

The population of this study consists of 207 patients aged 65 years and older who presented at the outpatient clinics of a teaching and research hospital and a public hospital in one province of the Southeastern Anatolia region. Data were collected using a face-to-face survey form between December 2023 and April 2024. Patients aged 65 years and older who had been taking medication for at least 6 months were included in the study. For sample size analyses, the median correlation coefficient was set at "0.3", the power was set at 95%, and the significance level (margin of error) was set at 0.05. To meet these criteria, a sample size of at least 138 participants from the older population was set. The research was conducted as a descriptive and cross-sectional study.

Data Collection Tools

"Personal Information Form", "Health Literacy Scale" and "Medication Adherence Reporting Scale" were used to collect the research data.

Health Literacy Scale-Short Form

The formula (Index = (Mean-1) x 50/3) is used in the evaluation of the scale. Mean is calculated by dividing the total scale score by the number of scale items. The index value calculated with the formula ranges between 0-50, with higher scores indicating better health. literacy. The scale is a 4-point scale ranging from 1 (very difficult) to 4 (very easy). It includes Likert-type answer options and consists of 12 items(Yılmaz & Eskici, 2021). The Cronbach alpha coefficient of the scale was found to be 0.85. The alpha value of our study was also found to be 0.85.

The validity and reliability of health literacy in individuals aged 18-65 years was conducted by Yılmaz et al.(Yılmaz & Eskici, 2021). In the study, CFA was performed with IBM AMOS 21 to determine the construct validity of health literacy in individuals over 65 years of age. In the first analysis, it was found below the expected model fit values. However, with the application of the three covariances shown in the modification indices, the fit indices were found to be appropriate as shown (Table 1).

Table 1. *CFA Values*			
Fit indices	Acceptable fit	Good fit	Working data
CMIN/DF (x^2/df)	< 5	< 3	2.95
RMSEA	< 0.10	< 0.05	0.097
CFI	> 0.90	> 0.95	0.93
IFI	> 0.90	> 0.95	0.93
NFI	> 0.90	> 0.95	0.90

Medication Adherence Reporting Scale

Medication Adherence Report Scale (MARS), which was developed by Horne and Hankins (2001) to evaluate medication adherence, was translated into Turkish by Şen et al. in 2019 after its validity and reliability. The scale consists of 5 items and is evaluated with a 5-point Likert scale with 5=never, 4=rarely, 3=sometimes, 2=often and 1=always. The total test score is obtained by summing the scores obtained from the items. The scores obtained from the scale vary between 5 and 25. An increase in the obtained scores indicates compatibility, while a decrease in the scores indicates incompatibility. The internal consistency coefficient of the Turkish form was determined as (Cronbach α=0.78) (Temeloğlu Şen et al., 2019). The alpha value of our study was found to be 0.82.

Statistical Analysis

Data were analysed using IBM SPSS V23. Number, percentage, minimum, maximum, mean, standard deviation values were used in the evaluation of the data. Compliance with normal distribution was analysed by Kolmogorov-Smirnov test. Spearman's rho correlation coefficient was used to examine the relationship between scale scores that did not fit the normal distribution. Variables predicting treatment compliance were evaluated by multiple linear regression analysis. The data were considered significant at the level of p<.05 with 95% confidence interval.

Ethical Principles

This study was conducted in accordance with the ethical standards of the Declaration of Helsinki. Approval was obtained from Mardin Artuklu University Non-Interventional Clinical Research Ethics Committee (2023/10-7). Consent was obtained from the patients after they were informed about the study in accordance with the principle of voluntariness. Necessary permissions were obtained from Mardin Education and Research Hospital.

Results

The majority of individuals over the age of 65 who participated in the study were women (61.8%), married (85%), primary school graduates (29%), their income equaled their expenses (74.4%), living with their spouse and children (47.8%) and using 4 or more medications 49.27%) consists of people (Table 2).

This table examines the relationship between medication adherence and health literacy. The table presents the results of a study conducted with 207 participants. The relationship between medication adherence and the scale measuring health literacy was found to be statistically significant (p=.002).

Table 2. *Distribution of Individuals According to Socio-Demographic Characteristics*			
Variables	Group	Number	Percent
Gender	Women	128	61.8
	Male	79	38.2
Marital status	Married	176	85.0
	Single	31	15.0
Educational background	Literate	56	27.1
	Primary school	61	29
	Middle school	34	16.4
	High school	33	15.9
	University	23	11.1
Income status	Income less than expense	31	15.0
	Equal to income expense	154	74.4
	Income exceeds expenses	31	10.6
Who do you live with?	Wife	57	27.5
	Wife and children	99	47.8
	Alone	34	16.4
	Others	17	8.2
Number of medications used	One	10	4.8
	Two	28	13.52
	Three	75	36.23
	Four and more	102	49.27
Variables		Mean ± SS	Min - Max
Age		69.85 ± 4.87	65- 96

There is a negative and significant relationship between health literacy score and age (p<.01). The health literacy score decreases with increasing age. This may indicate that older people are less able to understand and use health information. There is a strong, positive, and significant relationship between education level and health literacy

(p<.01). This suggests that health literacy levels increase significantly as education levels increase. In other words, more educated people are better able to understand and use health information. There is a negative and significant relationship between the number of medications and health literacy score (p<.05). This suggests that people who use more medicines may have slightly lower health literacy scores. This may be because polypharmacy makes health literacy more difficult.

Table 3.
Correlation Between Total Drug Score and Total Health Literacy Score

	Medication compliance	Health literacy total
Age	-.159*	-.272**
Education Status	.226**	.524**
Number of drugs	-.029	-.160*

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

The analysis shows that income status, health literacy, and marital status are significantly associated with medication adherence. Specifically, individuals with higher income status, higher health literacy, and who are married are more likely to adhere to their medications than those with lower income status, lower health literacy, and who are not married. There is no significant relationship between age and medication adherence (p>.05). The effect of age on medication adherence is very low (β= 0.046) and not statistically significan.

Table 4.
Predictors of Medication Adherence

	B	Sx	β	*p*
Income status	1.445	0.667	0.155	**.031**
Age	0.062	0.1	0.046	.532
Health literacy	1.069	0.469	0.163	**.024**
Educational background	0.054	0.025	0.124	**.036**
Marital status	0.79	0.921	0.006	.632
R=0.068; adjR2=0.055; F=4.972; p<.05.				

Discusison

Medication adherence in geriatric patients is critical in the management of chronic diseases. In this study, we examined the role of sociodemographic factors and health literacy in affecting medication adherence in geriatric patients. Our findings suggest that medication adherence is a complex phenomenon and is influenced by a number of factors.

Education level is one of the sociodemographic factors that affect medication adherence the most. As the level of education increases, the ability of patients to understand and evaluate health information also increases. This increases the likelihood of following instructions for consistent with the literature, and compliance increases as the level of education increases. (Bakan & İnci, 2021; Erci et al., 2018). The relationship between age and medication adherence is complex. Some studies have reported that age has a negative effect on medication adherence, whereas others have not found a significant relationship between age and medication adherence. In our study, no significant relationship was found between age and medication adherence. This finding is consistent with Mert et al.'s study with hypertension patients (Mert et al., 2019). Geriatric patients tend to have more than one chronic disease, leading to the need for polypharmacy. Polypharmacy can be a significant barrier to medication adherence. Patients may be overwhelmed by taking too many medications and may confuse which medication to take and when to take it. In our study, more than 49% of geriatric patients were taking four or more medications. An important method of simplifying the medical regimen is to prescribe a single daily dose of medication (Al-Hajje et al., 2015; Punnapurath et al., 2021). The use of too many medications will lead to variability in treatment motivation, and thus medication adherence will be adversely affected in the long term.

Health literacy is defined as the ability to understand, evaluate, and use health information (Song, 2024). Health literacy in geriatric patients may be affected by factors such as age-related cognitive decline, a low level of education, and difficulties in accessing health services (Ertem et al., 2021). Low health literacy reduces the likelihood of adherence to treatment by weakening patients' ability to understand and evaluate health information. According to our study results, a weak positive correlation was found between medication adherence and health literacy in geriatric patients. In a study conducted in Uganda, medication adherence was questioned, and it was found that patients discontinued their medication, especially after the first prescription, and did not know how to take it. (Lynch et al., 2019). In another study, inadequate communication and information provided by the health service were among the factors affecting medication non-adherence in the elderly. (Yap et al., 2016). In the literature, there are similar findings between health literacy and medication adherence (Akyol Güner et al., 2020; Bakan & İnci, 2021). Educational programs to improve health literacy levels are an important strategy to increase

medication

Education programmes:

Use of written material and visuals: Brochures, infographics, and visuals written in simple and understandable language can help patients grasp information more easily.

Multimedia images: Multimedia tools such as videos and animations can help present complex information in a more engaging and understandable way.

Effective verbal communication: Communicating clearly and concisely with patients ensures that instructions and warnings about medication use are understood correctly.

Self-monitoring: It is important to equip patients

Regular follow-up: Healthcare professionals regularly follow up with patients and assess medication compliance, allowing them to intervene if necessary.

Conclusion

In our study, health literacy was found to be the most important factor influencing medication adherence in geriatric patients. It was observed that medication adherence increased with an increase in the ability to understand and use the information received. These findings suggest that health literacy is a critical factor in medication adherence in geriatric patients.

Ethics Committee Approval: Ethics committee approval was received for this study from Mardin Artuklu University (2023/10-7). All steps of the research were carried out in accordance with the Declaration of Helsinki.
Informed Consent: Consent was obtained from the patients participating in the study.
Peer-review: Externally peer-reviewed.
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Genişletilmiş Özet

Dünyada ve Türkiye'de yaşlı nüfusun hızla artışı, sağlık sektöründe yeni zorlukları ve ihtiyaçları beraberinde getirmektedir. Yaşlı nüfusun artışıyla birlikte kronik hastalıkların görülme sıklığı artmakta ve bu durum bireylerin uzun süreli ilaç kullanma gerekliliğini doğurmaktadır. Kronik hastalıkların yönetimi, sadece tıbbi müdahaleleri değil, aynı zamanda bireylerin ilaçlarını doğru ve zamanında kullanmalarını da içerir. Bu bağlamda, sağlık okuryazarlığı, bireylerin sağlık bilgilerini anlayıp bu bilgileri sağlık hizmetlerine erişim ve ilaç kullanımına yönelik doğru kararlar almak için kullanmalarını sağlayan önemli bir beceri olarak karşımıza çıkmaktadır. Özellikle yaşlı hastalarda sağlık okuryazarlığı düzeyinin düşük olması, ilaç uyumsuzluğu gibi önemli sağlık sorunlarına yol açabilmektedir. İlaç uyumsuzluğu, tedavi başarısızlıklarına, hastalıkların ilerlemesine ve hastaneye yatış oranlarının artmasına neden olabilen ciddi bir durumdur. Bu çalışmanın amacı, Güneydoğu Anadolu Bölgesi'ndeki bir eğitim ve araştırma hastanesine ve bir kamu hastanesinin polikliniklerine başvuran 65 yaş ve üzeri hastalarda sağlık okuryazarlığı ve ilaç uyumu arasındaki ilişkiyi incelemektir. Araştırma bulguları, yaşlı hastalarda sağlık okuryazarlığının ilaç uyumu üzerindeki etkisini ortaya koymakta ve bu hastaların sağlık bilgilerini anlamalarına yardımcı olabilecek stratejilere dair önemli ipuçları sunmaktadır.

Araştırma, Aralık 2023 ile Nisan 2024 tarihleri arasında Güneydoğu Anadolu Bölgesi'ndeki bir eğitim ve araştırma hastanesi ve bir kamu hastanesinin polikliniklerine başvuran 65 yaş ve üzeri 207 hasta üzerinden yürütülmüştür. Araştırmaya katılan hastalar 65 yaş ve üzeri olup, en az altı aydır sürekli ilaç kullanan bireylerden oluşmaktadır. Veriler, katılımcılardan toplanan "Kişisel Bilgi Formu", "Sağlık Okuryazarlığı Ölçeği" ve "İlaç Uyumu Bildirme Ölçeği" aracılığıyla elde edilmiştir. Verilerin istatistiksel analizi, sağlık okuryazarlığı ile ilaç uyumu arasındaki ilişkinin yanı sıra yaş, eğitim durumu, gelir düzeyi ve ilaç sayısı gibi faktörlerle olan bağlantıları da ortaya koymak amacıyla yapılmıştır.

Araştırmaya katılan hastaların %49'undan fazlasının dört veya daha fazla ilaç kullandığı belirlenmiştir. Katılımcıların %28.5'inin sağlık okuryazarlığı düzeyinin düşük olduğu tespit edilmiştir. Gelir düzeyine bakıldığında, katılımcıların %74,4'ünün gelirinin giderine eşit olduğu ve %29'unun yalnızca ilkokul mezunu olduğu saptanmıştır. Düşük sağlık okuryazarlığına sahip olan bireylerin, ilaçlarını düzenli ve doğru bir şekilde kullanma konusunda daha fazla zorluk yaşadığı gözlemlenmiştir.

Bu çalışmada, sağlık okuryazarlığı ile ilaç uyumu arasında istatistiksel olarak anlamlı bir ilişki bulunmuştur (p= ,002). Yaş ile sağlık okuryazarlığı arasında negatif bir ilişki olduğu (p<,01) ve yaş arttıkça bireylerin sağlık bilgilerini anlama ve kullanma becerilerinin azaldığı tespit edilmiştir. Bu bulgu, yaşlı bireylerin sağlık sistemine dair bilgileri ve ilaç kullanımına yönelik talimatları anlamakta zorlandığını göstermektedir. Ayrıca, eğitim düzeyi ile sağlık okuryazarlığı arasında pozitif ve anlamlı bir ilişki bulunmuştur (p<,01). Eğitim seviyesi arttıkça sağlık okuryazarlığı düzeyi de artmakta, bu da eğitimli bireylerin sağlık bilgilerini daha iyi anlama ve kullanma yetisine sahip olduğunu ortaya koymaktadır.Çalışmada dikkat çeken bir diğer bulgu, ilaç sayısı ile sağlık okuryazarlığı arasındaki negatif ilişkidir (p<,05). Çoklu ilaç kullanımı (polifarmasi), hastaların ilaçlarını anlamalarını ve yönetmelerini zorlaştırmakta, bu da sağlık okuryazarlığı düzeylerini olumsuz etkileyebilmektedir. Gelir durumu, sağlık okuryazarlığı ve medeni durumun da ilaç uyumu üzerinde önemli bir etkisi olduğu görülmüştür. Daha yüksek gelir düzeyine sahip, evli ve sağlık okuryazarlığı yüksek olan bireylerin ilaç uyumlarının daha iyi olduğu tespit edilmiştir. Ancak, yaşın ilaç uyumu üzerinde anlamlı bir etkisi olmadığı bulunmuştur (p>,05).

Bu araştırma, yaşlı bireylerde sağlık okuryazarlığının ilaç uyumunu etkileyen en önemli faktörlerden biri olduğunu göstermektedir. Düşük sağlık okuryazarlığı, özellikle çoklu ilaç kullanımı ve karmaşık ilaç rejimlerinde ilaç uyumsuzluğunu artırmaktadır. Sağlık okuryazarlığı düzeyi düşük olan yaşlı bireyler, ilaç talimatlarını doğru bir şekilde anlayamamakta, bu da tedavi süreçlerinde aksaklıklara ve komplikasyonlara yol açmaktadır. Yaşlı bireylerde sağlık okuryazarlığını artırmaya yönelik eğitim programları geliştirilmesi, bu sorunların üstesinden gelinmesi için önemli bir stratejidir. Eğitim programlarında, yazılı materyal ve görsel araçların kullanımı oldukça etkili olabilir. Basit ve anlaşılır bir dille yazılmış broşürler, infografikler ve görseller, hastaların sağlık bilgilerini daha kolay kavramalarına yardımcı olabilir. Ayrıca, videolar ve animasyonlar gibi multimedya araçları karmaşık bilgilerin daha ilgi çekici ve anlaşılır bir şekilde sunulmasını sağlayabilir.

Sağlık profesyonelleri ile yaşlı bireyler arasında etkili bir iletişim de ilaç uyumunu artırmak açısından kritik öneme sahiptir. Hastalarla açık, öz ve anlaşılır bir dilde iletişim kurmak, ilaç kullanımıyla ilgili talimatların ve uyarıların doğru bir şekilde anlaşılmasını sağlayacaktır. Eczacıların, hastaların ilaç kullanımı hakkında bilgi ve destek sağlamada daha aktif bir rol üstlenmesi, sağlık okuryazarlığını artırma çabalarına önemli bir katkı sunabilir. Sonuç olarak, geriatrik hastalarda ilaç uyumunu artırmak için sağlık okuryazarlığını geliştirmek temel bir adımdır. Yaşlı bireyler, genellikle birden fazla kronik hastalığa sahip oldukları için çoklu ilaç kullanmak zorunda kalmaktadırlar. Bu durum, polifarmasi olarak bilinen ve ilaçların etkileşimleri, yan etkileri ve yanlış kullanımları gibi riskleri beraberinde getiren bir duruma yol açar. Polifarmasi, bireylerin ilaç rejimlerini takip etmelerini zorlaştırır ve sağlık okuryazarlığı düzeyleri düşükse bu zorluk daha da büyüyebilir. Bu nedenle, özellikle düşük eğitim seviyesine sahip ve çoklu ilaç kullanan yaşlı bireylerde sağlık okuryazarlığını artırmaya yönelik stratejilerin geliştirilmesi, yalnızca ilaç uyumunu değil, genel sağlık sonuçlarını da iyileştirebilir.