The Relationship between Health Beliefs and their Adaptation to Drug Use in Patients with Chronic Disease

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Abstract

Aim: This study was conducted to evaluate the relationship between health beliefs about medication use and treatment adherence of individuals who applied to the family health center and had hypertension, diabetes, or COPD.

Method: The study sample consisted of 210 patients. Data were collected using the Introductory Information Form, the Drugs Use Health Belief Scale, and the Medication Adherence and Prescription Renewal Scale. Frequency, percentage, mean, standard deviation, Pearson correlation test, and one-way ANOVA were used to analyze the data.

Results: When health beliefs regarding medication use were compared according to the type of chronic disease, no difference was found between the groups. When treatment adherence was compared, statistically significant differences were found between hypertension and COPD patients at very high level ($p<0.001$) and between diabetes and COPD patients at a high level ($p<0.01$). There was a significant negative correlation between patients' perceptions of health beliefs and their compliance with treatment at a good level for diabetes patients, a moderate level for hypertension patients, and a weak level for COPD patients.

Conclusions: It was determined that patients' adherence to treatment increased with improvement in their perception of health beliefs. The level of treatment adherence of COPD patients was higher than the other groups. Further studies examining the effect of education and counseling interventions to improve patients' health belief perceptions positively and to increase adherence to treatment are recommended.

Keywords: Hypertension, COPD, diabetes, patient compliance, drug.

Kronik Hastalığa Sahip Hastaların İlaç Kullanmaya İlişkin Sağlık İnançları ile Tedaviye Uyumları Arasındaki İlişki

Öz

Amaç: Bu çalışma, aile sağlığı merkezine başvuran ve-hipertansiyon, diyabet veya KOAH hastalıklarından birine sahip bireylerin ilaç kullanımına yönelik sağlık inançları ile tedaviye uyumları arasındaki ilişkiyi değerlendirmek amacıyla gerçekleştirildi

Yöntem: Araştırmanın örneklemini 210 hasta oluşturdu. Veriler Tanıtıcı Bilgi Formu, İlaç Kullanmaya İlişkin Sağlık İnanç Ölçeği ve İlaca Uyum ve Reçete Yazdırma Ölçeği kullanılarak toplandı. Verilerin analizinde sıklık, yüzde, ortalama, standart sapma, Pearson korelasyon testi ve One-way ANOVA kullanıldı.

Bulgular: Kronik hastalık türüne göre ilaç kullanımına ilişkin sağlık inançları karşılaştırıldığında gruplar arasında fark bulunmadı. Tedaviye uyumları karşılaştırıldığında; hipertansiyon ve KOAH hastaları arasında çok yüksek düzeyde ($p<0,001$), diyabet ve KOAH hastaları arasında ise yüksek düzeyde ($p<0,01$) istatistiksel olarak anlamlı farklar bulundu. Hastaların sağlık inanç algıları ile tedaviye uyumları arasında diyabet

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ETHICAL STATEMENT: Approval was obtained from the Ethics Committee of from the Non-Interventional Clinical Research Ethics Committee of a state university on January 8, 2018 (Decision No: 24).

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hastaları için iyi, hipertansiyon hastaları için orta, KOAH hastaları için zayıf düzeyde negatif yönde anlamlı ilişki saptandı.

Sonuç: Hastaların sağlık inanç algılarının iyileşmesiyle tedaviye uyumlarının arttığı belirlendi. KOAH hastalarının tedaviye uyum düzeyi diğer gruplardan yüksekti. Hastaların sağlık inanç algılarını olumlu yönde geliştirmeye ve tedaviye uyumu artırmaya yönelik eğitim ve danışmanlık girişimlerinin etkisini inceleyen ileri çalışmaların yapılması önerilmektedir.

Anahtar Sözcükler: Hipertansiyon, KOAH, diyabet, hasta uyumu, ilaç.

Introduction

According to the World Health Organization 2021, chronic diseases are responsible for approximately 75% of deaths worldwide, and this rate is expected to increase further in the next decade. In Türkiye, the severity of the situation is more pronounced, as chronic illnesses are responsible for approximately 89% of all deaths[1]. Among these chronic conditions, cardiovascular diseases, cancer, chronic respiratory illnesses, and diabetes occur most frequently. Hypertension, in particular, is a major risk factor for cardiovascular diseases and ranks among the leading causes of premature death worldwide[2,3].

In Türkiye, the prevalence of hypertension is increasing due to factors such as an aging population, sedentary lifestyle, obesity, and high sodium consumption[4]. Diabetes is also one of the rapidly rising chronic diseases globally; the International Diabetes Federation (IDF) predicts a significant increase in the number of people with diabetes by 2045[5,6]. Adherence to treatment is crucial in managing chronic conditions like diabetes and hypertension, as non-adherence can result in premature mortality and increased healthcare costs.

According to data from the Burden of Obstructive Lung Disease (BOLD) program, the prevalence of COPD among individuals aged 40 years and older was reported as 8.5% in women, 11.8% in men, and an overall prevalence of 10.1%[7]. Additionally, the Global Burden of Disease (GBD) study identified COPD as the sixth most prevalent disease worldwide among both men and women[8].

Health behaviors of patients are essential in managing chronic diseases. One of the theoretical models used to understand and modify these behaviors is the Health Belief Model (HBM). HBM aims to improve health behaviors and treatment adherence based on individuals' perceptions about health[9].

This study aimed to assess the relationship between medication-related health beliefs and treatment adherence in patients who visited a family health center and had one of the following chronic diseases: hypertension, diabetes, or COPD.

Material and Methods

Research design

The study was conducted using a descriptive design to evaluate the relationship between medication-related health beliefs and treatment adherence among patients who visited a family health center and had only one of the following chronic diseases: hypertension, diabetes, or chronic obstructive pulmonary disease (COPD).

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Research Questions

For patients with chronic diseases (Hypertension, Diabetes, COPD):

Is there a difference between the groups' health beliefs related to medication use?

Is there a difference between the groups' medication adherence and prescription renewal behaviors?

Is there a relationship between the groups' health beliefs related to medication use and medication adherence, and prescription renewal behavior?

Population and sample for research

The study population consisted of patients with hypertension, diabetes, or COPD who were receiving treatment at a Family Health Center in Istanbul between June 15 and September 15, 2018. The study sample was determined by simple random sampling at a 95% confidence level and 80% power for the Health Beliefs Scale Related to Medication Use (using the NCSS program), resulting in n=59 for each disease group. To test the validity of the Medication Adherence and Prescription Renewal Scale, the sample was expanded to include 70 participants from each group (hypertension, diabetes, and COPD), for a total of 210 participants.

Inclusion Criteria:

Age between 18 and 65

Receiving treatment at Family Health Center

Having only one of the following diseases: hypertension, diabetes, or COPD

Exclusion Criteria:

Having another chronic disease besides hypertension, diabetes, or COPD

Having a psychiatric diagnosis

Data Collection Tools

To assess the sociodemographic characteristics of patients with chronic diseases “Introductory Information Form”, to measure participants’ beliefs regarding medication use “Health Beliefs Scale Related to Medication Use”, and to assess their adherence to medication regimens, the “Adherence to Refills and Medications Scale” was used.

Introductory Information Form: The Descriptive Information Form, which was prepared by reviewing the literature, consisted of 28 questions covering demographic characteristics, health history, and medication habits[10,11].

Drugs Use Health Belief Scale: Developed in line with the Health Belief Model by Çiçek and Erci for female patients at a family health center, the Drugs Use Health Belief Scale measures patients’ health beliefs about medication use. The scale comprises 36 items grouped into six subdimensions: Perceived Susceptibility, Perceived Severity, Health Motivation, Perceived Benefit, Perceived Barriers, and Self-Efficacy. Each item is rated on a 5-point Likert scale ranging from 1 to 5; “strongly disagree” corresponds to 1 point, and “strongly agree” corresponds to 5 points. Items 23, 24, 25, 26, 27, and 28 are reverse-scored. The scale ranged from a minimum of 59 to a maximum of 151 points. Higher scores on the scale indicate strong health beliefs regarding conscious and

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prescribed medication use. The overall Cronbach's alpha reliability coefficient for the scale was 0.91, while subdimensions range from 0.80 to 0.93[10]. In this study, Cronbach's alpha reliability coefficient for the scale was 0.98, while subdimensions range from 0.87 and 0.90.

Adherence to Refills and Medications Scale (ARMS-7): Originally developed as the "Adherence to Refills and Medications Scale (ARMS-7)" by Dr. Kripalani and colleagues in 2009[12], the Turkish validity and reliability study was conducted by Gökdoğan and Kes in 2016[13]. The original seven-item scale has two subdimensions: "Taking Medication" and "Refilling Medication." It is designed to assess how well patients with chronic diseases adhere to their medication and manage prescription refills. Responses are measured on a four-point Likert scale: 1 (never), 2 (sometimes), 3 (often), and 4 (always). While the first six items follow this scoring method, the seventh item is reverse-scored. The total score ranges from 7 to 28[13], with a lower total score indicating better medication adherence. In the study by Kripalani and colleagues, the Cronbach's alpha coefficient was reported as 0.75, and the item-total score correlations ranged between 0.32 and 0.59[12,13]. In this study, the Cronbach's alpha reliability coefficient for scale was 0.89, while it was 0.80 for both sub-dimensions.

Data Collection Method and Process

The Introductory Information Form and scales were given to patients who met the study's inclusion criteria. Data were collected through face-to-face interviews after obtaining the patients' consent. Each interview lasted an average of 10 minutes.

Ethical Statement

Approval was obtained from the Ethics Committee of from the Non-Interventional Clinical Research Ethics Committee of a state university on January 8, 2018 (Decision No.: 24). A signed subject consent form in accordance with the Declaration of Helsinki was obtained from each participant. Permission was obtained from the scale owners via email for the scales to be used in the study. Written institutional permission was obtained. In compliance with confidentiality principles, the identities of the patients who participated in the study were not disclosed.

Data Analysis

Statistical analyses were conducted using SPSS 24.0. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were utilized to evaluate the data. The Kolmogorov-Smirnov test confirmed that the data followed a normal distribution. Accordingly, parametric tests were applied for analysis, specifically the independent samples t-test, Pearson correlation analysis, and one-way ANOVA. A p-value of <0.05 was considered statistically significant for all tests.

Results

The average age of the patients who participated in the study was 54.00±7.30 years. It was determined that 59% of participants were women, 41.9% were primary school graduates, 98.1% had social security, 60.5% reported that their income and expenses were balanced, and 91.9% did not live alone (Table 1).

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Table 1. Individual characteristics of the patients (n=210)

Variables	**X**	**SD**
Age (min:34, max:65)	54.00	7.30
	n	**%**
Gender		
Female	124	59.0
Male	86	41.0
Education Level		
Illiterate	8	3.8
Primary School	88	41.9
Middle School	47	22.4
High School	59	28.1
Higher Education	8	3.8
Social Security Status		
Yes	206	98.1
No	4	1.9
Employment Status		
Employed	58	27.6
Unemployed	152	72.4
Income Status		
Income < Expenses	53	25.2
Income = Expenses	127	60.5
Income > Expenses	30	14.3
Living Situation		
Mother-Father	5	2.4
Spouse-Children	188	89.5
Living Alone	17	8.1

X: *Mean*, ***SD:*** *Standard Deviation*, ***n:*** *Frequency*

It was determined that 36% of the patients stated that they had been diagnosed with a chronic disease for 5-9 years, 58.5% occasionally forgot to take their medication, 34.3% took their medication when they remembered, 21.4% could not take their medication on time, and 2.9% took two medications in the next dose. 56.2% of the participants (n=118) stated that they preferred a state hospital polyclinic for the treatment of chronic diseases. It was determined that 30.5% (n=64) of the patients did not use their medications regularly due to reasons such as not having time, having problems going to the family doctor, not having financial independence, not feeling the need, not being able to buy their own medications, not being able to read or write, and being embarrassed to use medications at school/work. It was found that 32.9% of the patients did not go to regular check-ups for medication treatment.

No statistically significant difference was found between the mean scores on the HBSRMU its subdimensions by patients' chronic disease (p>0.05) (Table 2).

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Table 2. Comparison of the mean scores on the HBSRMU and its subdimensions by patients' chronic disease

Scale and Its Subdimensions		Chronic Disease	n	X	SD	F*	p
HBSRMU		Hypertension	70	121.15	33.52	0.249	0.78
		Diabetes	70	121.07	30.13		
		COPD	70	118.02	25.38		
Subdimensions	**Perceived Susceptibility**	Hypertension	70	20.45	8.06	0.01	0.98
		Diabetes	70	20.55	7.15		
		COPD	70	20.34	5.39		
	Perceived Severity	Hypertension	70	19.84	7.8	0.532	0.58
		Diabetes	70	20.75	8.17		
		COPD	70	19.51	5.99		
	Health Motivation	Hypertension	70	19.75	5.19	1.285	0.27
		Diabetes	70	20.17	4.17		
		COPD	70	20.98	4.40		
	Perceived Benefit	Hypertension	70	15.32	3.50	1.471	0.23
		Diabetes	70	15.10	3.04		
		COPD	70	14.47	2.55		
	Perceived Barriers	Hypertension	70	20.58	7.47	1.289	0.27
		Diabetes	70	19.54	7.36		
		COPD	70	18.60	7.11		
	Self-Efficacy	Hypertension	70	25.18	6.32	0.710	0.49
		Diabetes	70	24.94	5.13		
		COPD	70	24.11	5.19		

n: *Frequency,* ***X:*** *Mean,* ***SD:*** *Standard Deviation,* **One-Way ANOVA*

When treatment adherence was compared based on the chronic diseases patients had, a statistically significant difference was found among the groups ($p<0.05$). In pairwise comparisons, the difference in mean scores on both the ARMS-7 scale and its subdimensions was found to be highly significant ($p<0.001$) between hypertension and COPD patients, and significantly high ($p<0.01$) between diabetes and COPD patients. It was observed that COPD patients had higher treatment adherence than those with hypertension or diabetes (Table 3).

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Table 3. Comparison of the mean scores on the ARMS-7 and its subdimensions by patients' chronic disease

Scale and Its Subdimensions		Chronic Disease	n	X	SD	F	p	Difference
ARMS-7		Hypertension (a)	70	13.22	3.79			c<a c<b
		Diabetes(b)	70	13.11	4.55	8.32	<0.001	
		COPD (c)	70	10.90	2.87			
Subdimensions	**Taking Medication**	Hypertension (a)	70	6.54	2.65			c<a c<b
		Diabetes(b)	70	6.51	2.86	3.60	0.02	
		COPD (c)	70	5.57	1.6			
	Refilling Medication	Hypertension (a)	70	6.68	1.31			c<a c<b
		Diabetes(b)	70	6.60	1.79	16.30	<0.001	
		COPD (c)	70	5.32	1.56			

n: *Frequency,* ***X:*** *Mean,* ***SD:*** *Standard Deviation,* **One-Way ANOVA*

When the relationship between patients' health belief perceptions and treatment adherence was evaluated separately for each disease group, a statistically significant negative correlation was found strong for diabetes patients (r=-0.755, p=0.001), moderate for hypertension patients (r=-0.602, p=0.001), and weak for COPD patients (r=-0.389, p=0.001). It was determined that patients' health belief perceptions and treatment compliance increased together.

Discussion

Medication use and treatment adherence in chronic diseases have a critical impact on health outcomes. The findings of this study indicate a significant negative correlation between the health beliefs of individuals with chronic diseases and their adherence to treatment. Specifically, the relationship was strong among patients with diabetes, moderate among those with hypertension, and weak among those with COPD. These findings align with similar results reported in the literature[14].

The medication adherence level of patients with hypertension was found to be moderate. The literature indicates that non-adherence to hypertension therapy is widespread globally, with approximately half of patients not continuing treatment regularly[15]. Low health beliefs, inadequate awareness of the disease, and insufficient education regarding lifestyle modifications are cited as the primary reasons for this issue[16].

High medication adherence among diabetic individuals may stem from their increased awareness of the severity of the disease and the regular patient education they receive, as noted in the literature. According to the 2022 report by the International Diabetes Federation (IDF), patient education plays a critical role in diabetes management, and regular patient education sessions enhance treatment adherence[5,17].

Although COPD patients showed low health beliefs regarding medication use, their treatment adherence was higher, likely because their symptoms are more pronounced and directly affect daily life[18].

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The importance of nursing interventions for strengthening health beliefs in chronic illnesses should be emphasized. It is indicated that educational and counseling services led with the active participation of healthcare professionals can raise patients' awareness of medication use and thus positively influence treatment adherence[19].

In conclusion, from the perspective of the Health Belief Model, personalized intervention strategies should be developed to improve patients' treatment adherence. More comprehensive, long-term studies evaluating the effectiveness of these strategies are recommended[20]. However, this study has some limitations. Since the data were gathered from a single family health center, the generalizability of the findings may be restricted. Additionally, due to the cross-sectional design, causality between the variables cannot be definitively established. Since self-report scales were used in the research, there may be bias or subjective assessments in participants' responses. Future research with multi-center, large-sample, and longitudinal designs will allow for a more extensive evaluation of the findings.

Conclusion

In conclusion, it has been demonstrated that the health beliefs of individuals with chronic diseases regarding medication use are significantly related to their treatment adherence. An increase in the level of health beliefs positively influences patients' adherence to treatment, and this relationship was found to be particularly strong among COPD patients.

Based on these findings, it is emphasized that healthcare professionals should prioritize regular patient education and counseling services in the management of chronic diseases. Supportive interventions should be planned to help patients maintain regular medication use, implement lifestyle modifications, and develop a sense of responsibility for their own health. Additionally, strengthening social support systems and ensuring regular follow-up appointments can enhance treatment success.

Future studies should be conducted with larger and more diverse samples, using multi-center and longitudinal designs. Furthermore, focusing on intervention studies that evaluate the effectiveness of strategies aimed at positively developing health beliefs could be beneficial for improving treatment adherence in chronic diseases.

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