Original Article

Evaluation of the Relationship Between Adherence to Treatment, Beliefs about Medicines and Social Support Levels in Turkish Patients with Four Types of Chronic Illness

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Abstract

Background: Determining the level of treatment adherence, beliefs about medicines, and social support levels of individuals with chronic diseases, examining the relationship between the adherence to treatment, beliefs about medication, and social support levels, and creating strategies for improving the level of adherence to treatment of individuals with chronic diseases.

Aims: The study aims to evaluate the relationship between adherence to treatment, beliefs about medications, and social support. It is a descriptive correlational study.

Method: The sample consisted of Turkish patients with ischemic stroke, type 2 diabetes, heart failure, and COPD (n=200). Data were obtained using the Medication Adherence Report Scale (MARS), the Beliefs about Medications Questionnaire (BMQ-T), and the Social Support Scale in Chronic Diseases (SSCII).

Results: The mean age of the patients was 71.57 ± 10.77 years. MARS score was 21.48 ± 3.91, and the total score of SSCII was 160.17 ± 51.87. Analyses revealed a statistically significant correlation between the MARS and the BMQ-T General Overuse sub-dimension scores ($p = 0.020$), the total MARS scores, and the BMQ-T General Harm sub-dimension scores ($p = 0.002$). The study found correlations between the total MARS and the SSCII scores ($p > 0.05$). However, there was no statistically significant correlation between BMQ-T and SSCII scores ($p > 0.05$).

Conclusion: To improve medication adherence and increase patients' positive beliefs about medicines, health professionals caring for and monitoring patients with chronic diseases need to cooperate with the family and other social support resources and provide training and counseling.

Keywords: Chronic Disease, Treatment Adherence, Beliefs, Medicines, Social Support

Introduction

The vast majority of chronic diseases, which are significant health problems at the individual and social level, require long-term drug use, symptom management, close health follow-up, and adequate social support. Approximately 50% of individuals with chronic diseases did not take their medications as prescribed (Alhewiti, 2014; Lemay et al., 2018; Lank et al., Ruksakulpiwat et al., 2020). In chronic illnesses that require long-term treatment (ischemic stroke, type 2 diabetes, heart failure, COPD), low medication adherence often leads to poor clinical outcomes, drug side effects, and increased health care costs (Cui & Naikoo, 2019; Lank et al., 2019; Mondesir et al., 2019; Park et al., 2018; Ruksakulpiwat et al., 2020).

Treatment adherence is defined as continuing a person's medication use behavior, diet, or lifestyle

changes following healthcare providers' recommendations (Lemay et al., 2018; Kara & Kara, 2019). Understanding the underlying causes of incompatibility in individuals with chronic diseases is important to increase medication adherence. The reasons for inadequate adherence to treatment include the characteristics of the disease and the severity of the disease, treatment-related factors (e.g., duration of treatment, number of medications, cost, frequency of administration), and drug side effects. In addition, patients' own beliefs and perceptions about drugs significantly affect their drug use behaviors (Lemay et al., 2018). Gu et al. (2017) concluded that the patients with type 2 diabetes that social support positively affects treatment adherence. Sjolander et al. (2013) found that negative beliefs were more common in stroke patients who did not comply with treatment. Insufficient social support causes many problems, especially physical problems, frequent hospitalizations, and adverse effects on self-care and quality of life (Turkmen & Cam, 2012). Contrary to factors that cannot be changed, such as poverty or side effects related to drug treatment, psychosocial factors such as beliefs about drug treatment, self-efficacy, and social support are important in increasing adherence (Turkmen & Cam, 2012; Sjolander et al., 2013; Gu et al., 2017).

Nurses try to increase adherence to treatment by using various adherence interventions and methods such as drug education and written materials, care plans, and electronic reminders (Emsley et al., 2015). Outpatient treatment programs aim at symptom management in chronic diseases and where the nurse carries out follow-ups, also facilitate the close follow-up of adherence to the disease and treatment (Tuncer & Khorshtd, 2018; Kalav & Bektas, 2021). Negative beliefs about medicines are influenced by increasing adherence to treatment with applications like an outpatient follow-up after discharge, telephone follow-up, scheduled home visits, individualized self-management programs, outpatient programs aimed at symptom management, drug evaluation by the pharmacist, and therapeutic advice to the physician, home-based primary care that allows 24-hour contact with patients and includes the case manager (Emsley et al., 2015).

This research will contribute to determining the level of treatment adherence, beliefs about medicines, and social support levels of individuals with chronic diseases, examining the relationship between the adherence to treatment, beliefs about medication, and social support levels, and creating strategies for improving the level of adherence to treatment of individuals with chronic diseases. The study aims to determine strategies for gaining positive beliefs about medicines and increasing social support levels to improve the adherence of individuals with chronic diseases to treat. The study was conducted to define treatment adherence, beliefs about medicines, and social support levels of individuals with chronic diseases and to evaluate the relationship between adherence to treatment, beliefs about medications, and social support levels.

Materials and Methods

Design: The research is descriptive-correlational research, a single-center study.

Setting: The research was carried out in the neurology, internal medicine, chest diseases, and cardiology service of Health Sciences University Istanbul Sultan II. Abdulhamid Han Training and Research Hospital in Istanbul between 14 July 2021 and October 2021.

Research Population and Sample: The study population consisted of patients with ischemic stroke, Type 2 diabetes, heart failure, and COPD hospitalized in the neurology, internal medicine, cardiology, and chest diseases wards. The research sample was composed of ischemic Stroke, Type 2 diabetes, heart failure, and COPD patients hospitalized in the neurology, internal medicine, cardiology, and chest diseases wards between 14 July 2021 and October 2021. In addition, the patients who met the inclusion criteria were included in the sample. The criteria for inclusion in the sampling were determined as follows: living within the provincial borders of Istanbul, volunteering for research, being in the age group of 18 or over, having the ability to read, write and speak Turkish, having been diagnosed with a chronic disease at least six months ago (ischemic Stroke, Type 2 diabetes, heart failure, and COPD), using at least one drug due to chronic disease (ischemic stroke, type 2 diabetes, heart failure, and COPD). The sample size was calculated as 49 for each disease group; the sample would consist of 196 patients. The POWER 3,1 package program was used to determine the sufficient sample volume in the study.

Data Collection Tools: *Patient Information Survey:* It includes questions about socio-demographic, disease-related, and social characteristics of patients diagnosed with chronic disease.

Medication Adherence Report Scale [MARS): MARS is a generic scale developed by Horne and Hankins in 2001 to evaluate drug adherence and customized based on the type of disease.23 Scale is a 5-point Likert type consisting of 5 items. Participants are asked to rate their frequency of occurrence using a 5-point Likert-type scale as "5 = never", "4 = rarely", "3 = sometimes", "2 = often" and "1 = very often". The total test score is obtained by adding the scores obtained from the items. Scale scores range from 5 to 25. An increase in the obtained scores indicates compatibility, and a decrease indicates inconsistency (Horne & Hankins, 2001; Temeloglu Sen et al., 2019).

Beliefs about Medicines Questionnaire [BMQ]: The Beliefs About Medicines Questionnaire was developed by Horne et al. in 1999 to evaluate the perceptions and expectations of individuals about medicines (Horne et al., 1999). The questionnaire consists of two main sub-areas, general and specific, each with two sub-scales. The BMQ-General section is General Harm and General Overuse, composed of four items each. The respondents indicate their acceptance level for each statement on a five-point Likert scale, ranging from "strongly agree = 1" to "strongly disagree = 5". The score of each scale is summed. The average score of each scale is calculated by dividing the total score by the number of questions. High scores from the questionnaire emphasize strong beliefs about the relevant concept (Cınar et al., 2018).

Social Support Scale in Chronic Diseases [SSCII).: Hilbert-McAllister developed it in 1990 to evaluate social support in chronic diseases (Hilbert-McAllister, 2003). The scale consists of 5 sub-dimensions: Close Interaction, Guidance, Feedback, Concrete Help, and Positive Social Interaction. Intimate Interaction subscale contains 1-10 items, Guidance subscale 11-17 and 30-36 items, Feedback subscale 18-20, 37 and 38 items, Concrete Assistance subscale 21-24 items, and Positive Social Interaction subscale 25-29 items. The scale consists of 38 items. Respondents to the scale indicate their degree of acceptance for each statement on a six-point Likert scale, ranging from "not satisfied = 1" to "very satisfied = 6". High scores indicate positive social support. The scale scores range from 38 to 228 (Senuzun Aykar et al., 2014).

Data Collection: The study was approved by the Health Sciences University Hamidiye Non-Interventional Research Ethics Committee dated 19.02.2021 and numbered E-46418926-050.01.04—11161. The institution's permission was obtained from the Istanbul Provincial Health Directorate, and the research permission numbered 54230385-604.02-02-177 and dated 14/07/2021. Necessary explanations about the research were given to the participants. Verbal and written informed consent was obtained from all participants. The data were collected in the patient's room between March 2021 and December 2021 through face-to-face interviews with the patients who met the sampling criteria. Filling out the data collection surveys was completed in 30 minutes.

Statistical Analysis: R vers. 2.15.3 Program was used for statistical analysis (R Core Team, 2013). Minimum, maximum, mean, standard deviation, median, first quartile, third quartile, frequency, and percentage were used in reporting study data. In addition, the conformity of the quantitative data to the normal distribution was evaluated with the Shapiro-Wilk test and graphical examinations. Independent Groups t-Test evaluated the normally distributed variables between two groups. The Mann-Whitney U test assessed the non-normally distributed variables between two groups. One-way analysis of variance was used for more than two-group evaluations of normally distributed variables. The Kruskal-Wallis test was used in the intergroup evaluations of the variables that did not show normal distribution, and the Dunn-Bonferroni test was used to determine the source of significance in the case of observing significance. Pearson correlation analysis was used to assess the level of relationship between quantitative variables. Cronbach's alpha coefficient was used to determine internal consistency levels. Statistical significance was accepted as $p < 0.05$.

Ethical concerns: The Helsinki Declaration of Human Rights was adhered to throughout the study. Before starting the research, ethical approval no. E-46418926-050.01.04—11161, dated 19.02.2021, was obtained from the Health Sciences University Hamidiye Non-Interventional Research Ethics Committee. Written consent was obtained by

signing the Patient Informed Consent Form. In addition, necessary permissions were obtained from the researchers who performed the Turkish validity and reliability of the scales used to collect data required for the study.

Results

Personal characteristics of patients

The ages of the patients ranged from 35 to 92 years, with a mean of 71.57 ± 10.77 years. Half of the sample (53.5%) was male, and (53%) were married. Nearly fifty percent (47.5%) of the patients are primary school graduates. The average life expectancy with chronic disease was 17.59 ± 9.06 years. More than ninety percent (92.5%) of the patients stated that they used their drugs regularly, 13.5% knew all the effects of the drugs, 31.5% knew some of the effects, and 85% received support from the people they lived with to take their drugs regularly (Table 1).

Beliefs about medicines and variables associated with beliefs about medicines

Beliefs About Medicines Questionnaire (BMQ-T) Scores from the Specific Concerns sub-dimension ranged from 1.4 to 4.6, with a mean of 3.22 ± 0.65. The scores obtained from the BMQ-T Specific necessity sub-dimension ranged from 1.2 to 4.4, with a mean of 3.16 ± 0.57. The scores received from the BMQ-T general overuse sub-dimension ranged from 1.5 to 4.25, with a mean of 3.00 ± 0.68. Finally, the scores obtained from the BMQ-T general harm sub-dimension ranged from 1.75 to 5, with a mean of 3.16 ± 0.67.

The patients who described their adherence level as "good/very good" had higher BMQ-T Specific necessity scores and lower General harm sub-dimension scores ($p = 0.044$, $p = 0.038$, respectively). Patients who reported that they used their medications regularly had higher BMQ-T Specific concerns and Specific necessity sub-dimension scores ($p = 0.007$, $p = 0.013$, respectively).

Medication adherence and variables associated with medication adherence

The scores of the patients on the Medication Adherence Report Scale [MARS]. ranged from 5 to 25, and the mean scale score was calculated as 21.48 ± 3.91. There was a statistically significant negative correlation at the level of 0.16 between the ages of the patients and the total MARS scores ($r = -0.16$, $p = 0.021$). In addition, patients who described their adherence to drug treatment as "good/very good" reported that they used their drugs regularly and that they received support from their cohabitants about the regular use of medication had higher total MARS scores ($p < 0.001$). Conversely, patients who reported that they forgot to use their medications had lower total MARS scores ($p < 0.001$) (Table 2).

Social support and variables associated with social support

The scores of the patients in the close interaction sub-dimension of the SSCII ranged from 10 to 60, with a mean of 42.04 ± 13.84, and the scores of the patients in the Guidance sub-dimension of the SSCII ranged from 14 to 84, with a mean value of 59.52 ± 19.42. The scores of the patients in the SSCII Feedback sub-dimension ranged from 5 to 30, with a mean value of 21.33 ± 6.91, and the scores of the patients in the Concrete Assistance sub-dimension of SSCII ranged from 4 to 24, with an average of 16.4 ± 5.76.

The scores of the patients in the SSCII Positive social interaction sub-dimension ranged from 5 to 30, with a mean value of 20.89 ± 7.43. The scores of the patients from the total SSCII (38 items) scale ranged from 38 to 228, with a mean value of 160.17 ± 51.87.

A statistically significant negative correlation was found between the age of the patients and the SSCII Positive social interaction sub-dimension scores ($r = -0.17$, $p = 0.020$) (Table 4). Those with social security had higher SSCII Positive social interaction sub-dimension scores than those without social security ($p = 0.034$) (Table 4).

Married patients had higher SSCII Close interaction, Guidance, Feedback, Concrete help, Positive social interaction sub-dimension and scale total scores (respectively, $p = 0.004$, $p = 0.007$, $p = 0.008$, $p = 0.016$, $p = 0.008$, $p = 0.005$) (Table 5). SSCII Guidance, Feedback, Concrete help, Positive social interaction sub-dimension and scale total scores were found to be higher in patients who reported going to regular health check-ups ($p = 0.021$, $p = 0.024$, $p = 0.022$, $p = 0.018$, $p = 0.022$, respectively). SSCII Close interaction, Guidance, Feedback, Concrete help, Positive social interaction sub-dimension and total scores were found to be higher in patients who reported that they used their medications regularly (respectively, $p = 0.017$, $p = 0.011$, $p = 0.005$, $p = 0.010$, $p = 0.029$). , $p = 0.013$) (Table 4).

Comparison of medication adherence, social support, and beliefs scale scores

Analyses revealed a negative correlation between the patients' Medication Adherence Report Scale (MARS) total scores and the BMQ-T General overuse sub-dimension scores (r = -0.17, p = 0.020). The current study found a statistically significant negative correlation between BMQ-T total scores and BMQ-T General harm sub-dimension scores (r = -0.22, p = 0.002). In addition, a statistically significant correlation was found between the Medication Adherence Report Scale (MARS) total scores and the Social Support Scale in Chronic Diseases (SSCII) sub-dimension and total scores (r =0.24-0.29; p > 0.05) (Table 5). There was no statistically significant relationship between the Beliefs About Medicines Questionnaire scores and the Social Support Scale in Chronic Diseases scores (p > 0.05).

Table 1. Personal characteristics of the patients (N=200)

	Mean ± SD	Min-Max
Variables		
Age	71.57 ± 10.77	35-92
Years of living with chronic disease	17.59 ± 9.06	1-40
Number of hospitalizations	2.94 ± 2.23	0-10
Number of medication (tablets)	6.27 ± 2.66	1-18
	n	%
Gender		
Female	93	46.5
Male	107	53.5
Marital status		
Married	106	53.0
Single	5	2.5
Widow/ Divorce	89	44.5
Education		
Literate	6	3.0
Primary School	95	47.5
Middle School	30	15.0
High School	36	18.0
University	6	3.0

Illiterate	27	13.5
Social security status		
No	9	4.5
Yes	191	95.5
Perception of income status		
Bad	19	9.5
Middle	128	64.0
Good	53	26.5
Residence		
Alone	32	16.0
Family	23	11.5
Spouse	83	41.5
Children	50	25.0
Caregiver	12	6.0
History of hospitalization		
No	32	16.0
Yes	168	84.0
Regular health check-up		
No	27	13.5
Yes	173	86.5
Medications used other than primary chronic disease		
No	24	12.0
Yes	176	88.0
Perception of adherence to medication therapy		
Bad	6	3.0
Below middle	25	12.5
Good	150	75.0

Very good	19	9.5
Regularly taking medications		
No	15	7.5
Yes	185	92.5
Knowledge of the effects of medicines		
No	110	55.0
Yes	27	13.5
I know some of them	63	31.5
The state of knowing the side effects of medicines		
No	115	57.5
Yes	25	12.5
I know some	60	30.0
Perception of the state of knowledge about medications		
Bad	78	39.0
Below middle	46	23.0
Good	73	36.5
Very Good	3	1.5
The state of forgetting medications		
No	60	30.0
Yes	140	70.0
Frequency of forgetting medications		
Almost every day	7	5.0
1-2 times a week	27	19.3
1-2 times a month	83	59.3
1-2 times a year	23	16.4
The attitude of the patient when forgetting to take medications		
"I buy it as soon as I remember."	73	52.1

"I wait for the next dose of medicine."	10	7.1
"I do not take medicine. I forgot that day."	57	40.7
Support status of the person with the disease process		
Insufficient	41	20.5
Below middle	16	8.0
Good	105	52.5
Very good	38	19.0
Individuals who support the chronic disease process		
No one is helping	34	17.0
My spouse	80	40.0
My spouse and children	61	30.5
My children	25	12.5

Tab. 2. Mean score of Beliefs about Medicines Questionnaire (BMQ) and Social Support Scale in Chronic Diseases (SSCII) (N=200)

	Number of items	Mean ± SD	Min-Max
Beliefs about Medicines Questionnaire (BMQ)			
Specific Necessity	5	3.22 ± 0.65	1.4-4.6
Specific Concern	5	3.16 ± 0.57	1.2-4.4
General Overuse	4	3.00 ± 0.68	1.5-4.25
General Harm	4	3.16 ± 0.67	1.75-5
Social Support Scale in Chronic Diseases (SSCII)			
Intimate Interaction	10	42.04 ± 13.84	10-60
Guidance	14	59.52 ± 19.42	14-84
Feedback	5	21.33 ± 6.91	5-30
Concrete Assistance	4	16.4 ± 5.76	4-24
Positive Social Interaction	5	20.89 ± 7.43	5-30
Total Score	38	160.17 ± 51.87	38-228
Medication Adherence Report Scale (MARS)	5	21.48 ± 3.91	5-25

Table 3. Comparison of SSCII scores in terms of the personal characteristics of the patients (N=200)

		Intimate Interaction	Guidance	Feedback	Concrete Assistance	Positive Social İnteraction	Total Score
Age	r	-0.10	-0.10	-0.13	-0.12	-0.17	-0.12
	p	0.155	0.144	0.079	0.080	0.020*	0.091
	n	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Marital status							
Married	106	44.76 ± 10.81	63.07 ± 14.57	22.58 ± 5.11	17.33 ± 4.7	22.23 ± 6.04	169.96 ± 39.27
Single/Widow/ Divorce	94	38.96 ± 16.12	55.52 ± 23.16	19.91 ± 8.3	15.34 ± 6.62	19.38 ± 8.52	149.12 ± 61.5
[a]t		2.953	2.717	2.688	2.422	2.692	2.816
p		0.004*	0.007*	0.008*	0.016*	0.008*	0.005*
Social security status							
No	9	44 (37- 48)	64 (49- 68)	22 (18- 25)	14 (12- 19)	17 (13- 24)	162 (128- 178)
Yes	191	47 (38- 50)	66 (54- 70)	24 (20- 25)	18 (14- 20)	25 (18- 25)	176 (151- 190)
[c]z		-1.259	-1.240	-0.680	-1.756	-2.122	-1.343
p		0.208	0.215	0.497	0.079	0.034*	0.179
Primary chronic disease							
COPD	50	46.5 (38- 50)	64 (55- 70)	24 (19- 26)	18 (14- 20)	24 (19- 25)	174 (148- 190)
Diabetes Mellitus	50	45 (34- 50)	66 (54- 70)	23 (19- 25)	18.5 (12- 20)	24 (18- 25)	172 (150- 190)
Heart Failure	50	46 (39- 50)	67 (53- 70)	23 (19- 26)	17 (14- 20)	25 (15- 25)	175.5 (148- 190)
Stroke	50	47.5 (37- 50)	68 (56- 70)	24.5 (20- 25)	19.5 (15- 20)	25 (17- 25)	180 (152- 190)
[d]F		0.243	0.124	0.330	0.163	0.034	0.145
p		0.866	0.946	0.804	0.921	0.992	0.933
Regular check status							
No	27	44 (30- 49)	60 (40- 68)	20 (16- 24)	15 (9- 20)	18 (10- 25)	157 (112- 180)
Yes	173	47 (39- 50)	68 (56- 70)	25 (20- 25)	19 (14- 20)	25 (20- 25)	177 (152- 190)
[c]z		-1.692	-2.305	-2.257	-2.292	-2.356	-2.293
p		0.091	0.021*	0.024*	0.022*	0.018*	0.022*
Perceptions of adherence to medications therapy							
Bad/ sub-average	31	34.58 ± 16.86	47.1 ± 23.34	16.84 ± 8.37	12.35 ± 6.54	15.87 ± 8.97	126.74 ± 63.07

Good/Very good	169	43.4 ± 12.81	61.8 ± 17.76	22.15 ± 6.3	17.14 ± 5.29	21.81 ± 6.74	166.3 ± 47.25
[a]t		-2.770	-3.334	-3.360	-3.843	-3.510	-3.325
P		0.009*	0.002*	0.002*	<0.001*	0.001*	0.002*
Perception of taking medications regularly							
No. it's not regular	15	29 (10- 47)	31 (14- 68)	11 (5- 22)	8 (4- 19)	13 (5- 25)	92 (39- 176)
Yes. regular	185	47 (39- 50)	67 (56- 70)	24 (20- 25)	19 (14- 20)	25 (19- 25)	177 (152- 190)
[c]z		-2.378	-2.531	-2.785	-2.567	-2.185	-2.487
p		0.017*	0.011*	0.005*	0.010*	0.029*	0.013*
Frequency of forgetting medications							
Almost every day	7	36 (20- 45)	46 (28- 52)	16 (10- 19)	10 (6- 14)	10 (6- 12)	114 (76- 148)
1-2 times a week	27	37 (10- 50)	54 (14- 70)	19 (5- 25)	16 (4- 20)	17 (5- 25)	137 (38- 190)
1-2 times a month	83	47 (42- 50)	66 (57- 70)	24 (20- 25)	19 (14- 20)	25 (21- 25)	177 (155- 190)
1-2- times a year	23	44 (33- 50)	69 (56- 73)	25 (20- 27)	19 (14- 20)	25 (18- 25)	178 (148- 193)
[b]χ^2		12.094	16.747	17.585	15.373	22.264	16.955
p		0.007*	0.001*	0.001*	0.002*	<0.001*	0.001*
Support from people with regular medication intake							
No	30	24.63 ± 17.38	34.57 ± 24.27	12.33 ± 8.84	9.4 ± 6.56	12.13 ± 8.81	93.07 ± 65.17
Yes	170	45.11 ± 10.51	63.92 ± 14.59	22.91 ± 5.09	17.63 ± 4.63	22.44 ± 5.97	172.01 ± 38.71
[a]t		-6.253	-6.424	-6.367	-6.590	-6.162	-6.437
p		0.001*	0.001*	0.001*	0.001*	0.001*	0.001*
Residence							
Alone	32	11.5 (10-31.5)	14.5 (14- 52)	5 (5- 20.5)	4 (4- 14)	5 (5- 13)	40.5 (38- 130.5)
Family	23	49 (40- 50)	64 (52- 70)	24 (19- 25)	16 (12- 20)	24 (18- 25)	179 (145- 190)
Spouse	83	47 (40- 50)	67 (57- 70)	24 (20- 25)	19 (14- 20)	25 (20- 25)	176 (153- 190)
Kids	50	50 (45- 50)	70 (65- 70)	25 (23- 26)	20 (17- 20)	25 (24- 25)	190 (176- 190)
Caregiver	12	40 (29.5- 45.5)	57 (43- 69)	20 (15- 25.5)	16.5 (11.5- 19.5)	20 (14.5- 25)	154.5 (113.5- 184)
[b]χ^2		58.346	53.269	48.570	45.989	54.163	53.108
p		0.001*	0.001*	0.001*	0.001*	0.001*	0.001*
Support status of the person with the disease							
Insufficient	41	19 (10- 34)	28 (14- 54)	10 (5- 20)	8 (4- 16)	10 (5- 17)	76 (38- 152)

Below middle	16	40 (35.5- 48.5)	57.5 (51.5- 67.5)	20 (18.5- 25)	16.5 (14- 19)	22 (18- 24.5)	153 (145- 179.5)
Good	105	47 (44- 50)	67 (60- 70)	24 (21- 25)	19 (16- 20)	25 (21- 25)	178 (160- 190)
Very good	38	50 (50- 59)	74.5 (70- 84)	26 (25- 30)	20 (18- 24)	25 (24- 30)	194.5 (187- 221)
$^b\chi^2$		79.894	74.586	71.843	55.295	67.130	77.637
p		<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*
People who support the chronic disease process							
No one is helping	34	17 (10- 34)	23 (14- 59)	8 (5- 22)	6.5 (4- 16)	8 (5- 20)	61 (38- 162)
My spouse	80	46 (40- 50)	68 (55.5- 70)	24 (20- 25)	19 (14- 20)	25 (20- 25)	177.5 (152- 190)
My spouse and children	61	50 (44- 50)	70 (62- 70)	25 (22- 25)	20 (17- 20)	25 (23- 25)	190 (164- 190)
My children	25	48 (45- 50)	67 (58- 70)	24 (21- 25)	19 (15- 20)	24 (21- 25)	179 (161- 190)
$^b\chi^2$		46.909	37.864	35.417	33.409	40.750	42.181
p		0.001*	0.001*	0.001*	0.001*	0.001*	0.001*

r=Pearson correlation coefficient; [a]Independent groups t-test, Kruskal-Wallis test, the results are presented as median (first quartile, third quartile); Mann-Whitney U test, results are presented as median (first quartile, third quartile); [d]One-way analysis of variance *p < 0.05

Table 4. Comparison of Medication Adherence Report Scale (MARS) scores according to the personal characteristics of the patients (N=200)

	Medication Adherence Report Scale (MARS	
Age	r = -0.16 p= 0.021*	
	n	Mean ± SD
Primary Chronic Disease		
COPD	50	23 (20- 25)
Diabetes Mellitus	50	24 (21- 25)
Heart Failure	50	22 (18- 24)
Stroke	50	22 (19- 24)
[d]F		2.913
p		0.036
Perceived adherence with medication therapy		
Bad/sub-average	31	17.13 ± 4.83
Good/very good	169	22.28 ± 3.13
[a]t		-5.721
p		<0.001*
Taking the medications regularly		
No	15	14 (10- 17)
Yes	185	23 (21- 24)
CZ		-5.131
p		<0.001*
The state of forgetting medications		
No	60	23.22 ± 3.35
Yes	140	20.74 ± 3.91
[a]t		4.564
p		<0.001*
Frequency of forgetting medications		
Almost every day	7	17 (10- 20)
1-2 times a week	27	18 (15- 22)
1-2 times a month	83	22 (20- 24)
1-2 times a year	23	24 (21- 24)
[b]χ^2		29.220
p		<0.001*
Support of people with regular medication intake		
No	30	19.47 ± 5.89
Yes	170	21.84 ± 3.34
[a]t		-2.141
p		0.040*
Support of the person with the disease process		
Insufficient	41	22 (17- 24)
Below middle	16	21 (18.5- 22.5)
Good	105	23 (20- 24)
Very Good	38	24 (22- 25)
[b]χ^2		8.854
p		0.031*

r=Pearson correlation coefficient [a] Independent groups t-test [b]Kruskal-Wallis test. Results are presented as median (first quartile. third quartile). Mann-Whitney U test. Results are presented as median (first quartile. third quartile). [d]One-way analysis of variance
*p < 0.05

Table 5. Comparison of Medication Adherence Report Scale (MARS) total scale scores and Beliefs about Medicines Questionnaire (BMQ) subscale scores (N=200)

	Medication Adherence Report Scale (MARS) total score	
Beliefs about Medicines Questionnaire (BMQ)	r	p
Specific Necessity	0.11	0.13
Specific Concern	-0.04	0.61
General Overuse	-0.16	0.020*
General Harm	-0.22	0.002*
Social Support Scale in Chronic Diseases (SSCII)		
Intimate Interaction	0.26	<0.001*
Gudiance	0.28	<0.001*
Feedback	0.29	<0.001*
Concrete Assistance	0.24	0.001*
Positive Social Interaction	0.29	<0.001*
Total Score	0.28	<0.001*

r= Pearson correlation coefficient *p< 0.05

Discussion

Individuals' beliefs about medicines generally include their beliefs about the necessity of the prescribed drug to protect their health and their concerns about the negative effects of the prescribed medication. In this study, the beliefs of individuals with chronic diseases about the necessity of drugs and their concerns about possible side effects were higher than their beliefs about the overuse and harm of medications. In the study of Khdour et al. (2020) on diabetes patients, it was found that their belief about the necessity of medication is high, and their concerns about possible side effects of drugs are low. In the study by Krauskopf et al. (2015), in which patients with the chronic obstructive pulmonary disease were evaluated about adherence to treatment and their beliefs about medicines, it was found that patients with high concerns about possible side effects of drugs had low adherence to treatment. In Alhewiti's (2014) study, it was found that concerns about the necessity and overuse of the drug are high in elderly individuals with chronic diseases. In the study conducted by Sundell and Jonsson (2016), individuals using prescription or non-prescription drugs had high beliefs about the necessity of drugs, while their beliefs about possible harm and excessive use of drugs were low.

One of the important components in managing chronic diseases is treatment adherence. Numerous factors affect adherence, such as low socioeconomic status, lack of family or social support network, lack of health insurance, high medication cost, and cultural beliefs about illness and treatment (Adisa et al., 2017). While non-adherence to treatment in individuals with chronic diseases causes repeated hospitalizations and an increase in mortality, it also causes a significant clinical and financial burden on the health system (Unni et al. 2016; Adisa et al., 2017). The current study determined a high level of adherence to medication (21.48 ± 3.91) in individuals with chronic diseases. Among the patients who were asked about their treatment adherence status, those who stated that their adherence level was good/very good had higher scores. In Mondesir et al. (2018) study on patients with coronary heart disease, drug adherence was high (68.9%). Different adherence results may be due to cultural differences, financial reasons, beliefs about the disease, unawareness of the seriousness of the disease, inability to communicate adequately with health professionals, and differences in the social support structure. The literature results show that the patients' adherence to the drug therapy is still insufficient, and the development of strategies

to increase the adherence to the drug therapy is needed.

Elderly patients with multiple morbidities are generally at high risk for drug non-adherence. Increasing age and more than one chronic disease may further increase the drug burden and negative experiences of taking drugs. Medication non-adherence causes adverse health outcomes, increased hospitalization rates, poor quality of life, and high healthcare costs (Yang et al., 2020). In this study, a statistically significant negative correlation was found between the age of the patients and the total MARS scores. Differently, in Park et al. (2018) study, no relationship was found between age and adherence to treatment in individuals with chronic diseases. Unni et al. (2016) found no relationship between age and adherence to treatment of diabetic patients. It is thought that the age factor is important in adherence to the treatment.

Low adherence to drug treatments leads to worsening disease symptoms, increased healthcare costs, and mortality. In contrast, higher medication adherence is associated with lower healthcare costs and more successful chronic disease self-management (Lam & Fresco, 2015; Yang et al., 2020). The current study did not reveal any statistically significant difference between total MARS scores in terms of personal perception for knowing the effects of drugs and the side effects. One of the important components of treatment adherence is knowing the effects and side effects of the drugs in the treatment plan. Therefore, non-adherence with treatment may be observed in individuals with insufficient information about their disease and treatment plan.

Social support can be defined as the physical, emotional, informative, material, and spiritual assistance provided by the people around, which helps the individual to feel important and valuable, and facilitates their adaptation to the situation brought about by a crisis or change in his life and helps to protect his/her psychological health. In this study, the perception of satisfaction with social support resources was higher according to the scale scores of the patients with chronic diseases. The fact that most of the study sample is married and living with someone suggests that it affects the perception of social support. The use of social networks for the development of healthy lifestyle behaviors in individuals with chronic diseases and the

explanation of the importance of social support by health professionals to patients and their relatives are important in the treatment adherence process.

The use of multiple medications, age, ethnicity, environmental factors, the patient's belief, thought, and knowledge about the disease and treatment, and the quality of the relationship between the patient and health professionals may affect the level of adherence to treatment in individuals with chronic diseases (Yılmaz & Colak, 2018). Long-term drug therapy may cause treatment adherence problems. Interventions that impact treatment adherence are complex practices that include several components such as information, self-monitoring, counseling, and supportive care. No statistically significant correlation was found between the MARS total scores and the Specific concerns and Specific necessities sub-dimension scores of the patients participating in this study. Analysis revealed a negative correlation between the General overuse sub-dimension scores and the General harm subscale scores.

Conclusion and recommendations: It is recommended that nurses who care for and monitor patients with chronic diseases cooperate with the patient's family and other social support resources and provide training and counseling to improve drug adherence and increase patients' positive beliefs about drugs. In addition, adherence interventions such as alarm systems, calendars, reminder schedules, use of multi-compartment drug boxes, and simplification of medication regimens, home visits, and telephone follow-up after discharge should be used to improve medication adherence, and plans should be made to increase social support.

Limitations: One of the limitations of this study is that the data obtained was conducted only with patients who had diabetes, COPD, heart failure, and ischemic stroke hospitalized in the internal medicine, neurology, cardiology, and chest diseases service of a training and research hospital. In addition, the study's limitations were that the data this study were based on patients' self-reports, did not use a sampling method, and reached only 50 patients from each disease group.

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