Original Article

The Effect of Rational Drug Use on Health Perception and Drug Compliance in Chronic Diseases

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Abstract

Background: Research was conducted as a descriptive and relational manner in order to examine the effect of rational drug use on health perception and drug compliance in chronic diseases.

Methodology: Research population consisted of patients hospitalized in the Internal Medicine Services of Siirt State Hospital. Sample of study consisted of 257 patients. The patient identification form, health perception scale, rational drug use scale, and morisky 8-item medication adherence questionnaire (MMAS-8) were used for data collection. Frequency, standard deviation, mean, anova, kruskal wallis test, t test, mann-whitney u test and pearson correlation analysis were used to evaluate the data. All findings were taken at $p < 0.05$ significance level.

Results: Of the patients with an average age of 59.11 ± 18.45, 52.9% were female, 81.3% were married, 44.0% were illiterate, 72.4% were not working, 47.5% had income equal to expenses, and 29.2% had diabetes. Mean score of the health perception scale was 36.70 ± 8.48, the mean score of the rational drug use scale was 67.28 ± 15.30, and average score of drug compliance scale was 4.07 ± 2.34. It was found that there was a statistically significant difference between total scores of health perception of patients and their gender, marital status, education, employment and income status ($p < 0.05$). There was a statistically significant difference between income status and rational drug use ($p < 0.05$). It was found that there was a statistically significant difference between educational status and drug compliance score average and that drug compliance increased as education level increased ($p < 0.05$). There was a positive correlation between rational drug use and drug compliance score averages.

Conclusions: In our study, it was observed that rational drug use was moderate, health perceptions and drug compliance were low, and rational drug use had a positive effect on drug compliance.

Key words: Chronic disease, Drug compliance, Health perception, Rational drug use.

Introduction

With the prolongation of life and the increase of the population, chronic diseases increase and become an important health problem in the world and in our country (Sanal Karahan & Hamarta, 2019; Uei et al., 2017; Yildirim & Cevirgen, 2019). Chronic diseases, which account for 70% of all deaths, cause the death of 40 million people every year (Altuntas et al., 2015). In view of the changing population structure and the increasing number of chronic patients, drug consumption and the problems associated with it are too large to be ignored (Yilmazturk, 2013). At the stage of drug use, individuals face many problems such as high or low dose drug use, over-the-counter medication, and not taking medication on time. This requires that drug treatment be planned meticulously and that the treatment given is followed (Santas & Demirgil, 2017). At this stage, rational drug use comes to the fore. The "rational use of drugs", which is also described as the correct use of drugs, is described as giving the disease-specific drug to the right individual, with the right way, at the right time and with the right information (Ergun & Altintas Aykan, 2019; Yilmazturk, 2013).

Individuals with chronic disease cannot adapt to rational drug use due to multiple treatments, time mismatch, side effects of the drug, beliefs about disease and treatment, low literacy level, language and cultural differences (Aggarwal et al., 2014; Altuntas et al., 2015). As a result of drug incompatibilities in the treatment of chronic diseases, hospitalizations and costs increase, diseases become severe and the quality of life of patients decreases (Kara & Kara, 2019). In addition, the wrong dose and unnecessary use of drugs can even cause death of individuals (Pirincci & Bozan, 2016). Patient compliance and health perception constitute one of the important components of rational drug use (Gun & Korkmaz, 2014; Macit et al., 2019; Ugrak et al., 2015). In these patients, prevention of complications, reduction of symptoms, ensuring of psychosocial well-being and success of treatment depend on the patients' adoption of self-care management and compliance with drug treatment (Altuntas et al., 2015; Demirbag & Timur, 2012; Kara & Kara, 2019).

Health perception is expressed as a situation that is measured by the subjective response of the person to the question asked about his or her health and includes the person's feelings and thoughts towards his or her own health (Efteli & Khorshtd, 2016; Ozdelikara et al., 2018). Health perception is also directly related to the process of improving individual health, which aims at providing and maintaining healthy lifestyle behaviors to the person (Lee et al., 2015). The process that comes with the disease affects individuals negatively, psychosocially and physically and causes a change in the individual's perception of health (Glozah & Pevalin, 2014; Kucuk & Yapar, 2016).

Individuals with chronic disease have been living with this disease for many years. Nurses have a great role in determining the health perception of these patients and the importance of rational drug use in the management of diseases (Altuntas et al., 2015; Sahingoz & Balci, 2013). Nurses who have a close relationship with patients play an important role in determining the patient's attitudes and behaviors towards compliance with requirements and treatment (Sahingoz & Balci, 2013). Based on these data, the aim of this research is to determine the effect of rational drug use on health perception and drug compliance of individuals with chronic disease.

Material and Method

Type of the Study: This research was carried out descriptively and relationally to investigate the effect of rational drug use on health perception and drug compliance in chronic diseases.

Place and Time of the Study: The research was carried out in the Internal Medicine Services of Siirt State Hospital between May 2019 and November 2019**.**

Universe and Sampling: The population of the study consisted of patients with chronic disease who were hospitalized in the internal clinics of the hospital between the dates mentioned. The sample of the study consisted of patients aged 18 years or older who had chronic disease for 6 months or longer, who agreed to participate in the study and had cognitive competence to answer questions. The study was completed with a total of 257 patients who had with respiratory system (n = 56), cardiovascular system (n = 70), nervous system (n = 14), kidney failure (n = 42) and diagnosed with diabetes (n = 75).

Collection of Data: The study's data was collected by the researchers using data collection tools and in 25-minute interviews with each patient using a face-to-face interview technique. The patient identification form, health perception scale, rational drug use scale, and morisky 8-item medication adherence questionnaire (MMAS-8) were used for data collection.

Patient Identification Form: This form consists of a total of 8 questions that question the age, gender, educational status, marital status, working status and monthly income information of the patients participating in the study, chronic disease and drug knowledge.

Health Perception Scale: This scale was developed by Diamond et al. (Diamond et al., 2007). Turkish validity and reliability were made by Kadioglu et al. (Kadioglu & Yildiz, 2012). The scale, which is a quintet likert type, consists of total 15 questions. It has four sub-dimensions: "control Center", "self awareness", "certainty" and "importance of health". Each item in the scale is answered as "I agree (5)", "I agree (4)", "I am undecided (3)", "I disagree (2)", "I disagree at all (1)". Items 1, 5, 9, 10, 11 and 14 are positive, items 2, 3, 4, 6, 7, 8, 12, 13 and 15 are negative statements. Negative statements on the scale are scored inversely. Minimum 15 points and maximum 75 points are obtained from the scale. A high score from the scale means that individuals perceive their health positively, and a low score means that they perceive their health

negatively. Cronbach alpha value of the scale was found 0.77. Sub-dimension of the scale Cronbach Alpha Values: Control center 0,90; Self awareness 0.91; Certainty 0.91; importance of health is 0.82 (Gur & Sunal, 2019; Kadioglu & Yildiz, 2012). In this study; the total Cronbach alpha value of the scale is 0.77, while the sub-dimensions; 0.81 for the control center, 0.78 for self-awareness, 0.73 for certainty, and 0.72 for importance of health.

Rational Drug Use Scale: The scale, developed by Cengiz et al., and which of the quintet likert type, consists of 21 items and one dimension. Each item in the scale is answered as "never (1)", "rarely (2)", "occasional (3)", "often (4)", "always (5)". Only the 17th item is scored in reverse in the scale. The total scores that can be obtained from the scale vary between 21-105. Rational drug use increases as the total score obtained from the scale increases. While evaluating the total score obtained from the scale; 21- 52 points are low, 53-67 points are medium, 68-105 points are high. Cronbach alpha of the scale was found 0.84 (Cengiz, 2018). In this study, cronbach alpha value was found 0.89.

Morisky 8-Item Medication Adherence Questionnaire (MMAS-8): This scale was developed by Donald E. Morisky (Morisky et al., 2008). The Turkish validity and reliability of the scale was made by Hacihasanoglu et al., (2014). Morisky Drug Compliance Scale is a self-assessment scale that measures drug taking behavior. The scale consists of 8 questions. The questions in the scale are coded as Yes = 0, No = 1. Drug compliance is evaluated according to the total score obtained from the scale. If the score< 6 indicates low, ≥6 <8 indicates moderate compliance, and 8 points indicate high compliance. Cronbach alpha of the scale was found 0.79. (Hacihasanoglu Asilar et al., 2014; Morisky et al., 2008). In this study, cronbach alpha value was found 0.74.

Evaluation of the Data: Statistical analysis of the data was done with SPSS 22.0 package program. Standard deviation, percentage, average, minimum and maximum values were used for demographic data. In the calculations related to the scale scores, t test, anova, Kruskal Wallis and Mann Whitney-u test were used. All findings were taken with p <0.05 significance level.

Ethical Aspect of the Research: Permission was obtained from Siirt University Non-Interventional Clinical Research Ethics Committee before starting the research. (Date: 19.03.2019, Number No: E.5000). In addition, written permission was obtained from Siirt State Hospital where the study was conducted. Written and verbal consent was also obtained from patients who agreed to participate in the study.

Limitations of the study: This study is limited only to patients who accepted the study. It cannot be generalized to all patients.

Results

Of the patients with an average age of 59.11 ± 18.45, 52.9% were female, 81.3% were married, 44.0% were illiterate, 72.4% were not working, 47.5% had income equal to expenses, and 29.2% had diabetes (Table 1). The patients' perception of health scale control center sub-dimension mean score was 13.72 ± 4.72, certainty sub-dimension mean score was 10.70 ± 3.38, self-awareness sub-dimension mean score was 6.83 ± 2.75, importance of health sub-dimension mean score was 5.44 ± 2.47, and the total mean score was 36.70 ± 8.48. The total score average of rational drug use scale was calculated as 67.28 ± 15.30, and the total score average of MMAS-8 was 4.07 ± 2.34 (Table 2). It was found that the health perception scale control center subscale and total score average of male patients included in the study were higher than the female patients and the difference was statistically significant (p<0.05). It was found that the single patients' health perception scale, control center and certainty subscale and total score average were higher than the married ones and the difference was statistically significant (p<0.05). The health perception scale control center and self-awareness subscale mean score of patients with undergraduate and graduate degrees was higher than the others and the difference was statistically significant (p<0.05). It was found that the health perception scale control center and precision subscale and total score average of the working patients were higher than the non-working patients and the difference was statistically significant (p<0.05). It was found that the health perception scale control center sub-dimension and total score average of the patients with good financial status were higher than the others and the difference was statistically significant (p<0.05). It was found that the rational drug use scale score average of patients with poor financial status was higher than the others and the difference was statistically significant (p<0.05). The average MMSA-8 score of illiterate patients was found to be higher than others, and the difference was

statistically significant. The difference between total and sub-dimensions of health perception scale and rational drug use scale and MMSA-8 score averages was found to be statistically insignificant (p>0.05) (Table 3). It was found that the patients included in the study had a negative relationship between rational drug use and the self-awareness sub-dimension of the health perception scale. There was a positive correlation between MMAs-8 and the certainty sub-dimension of the health perception scale. There was a positive correlation between rational drug use and MMAS-8 (Table 4).

Table 1. Descriptive Characteristics of the Patients (n=257)

Descriptive characteristic	S	%
Gender		
Female	136	52.9
Male	121	47.1
Marital status		
Married	209	81.3
Single	48	18.7
Education level		
Nonliterate	113	44.0
Literate	36	14.0
Primary education	53	20.6
High school	45	17.5
Undergraduate and Graduate	10	3.9
Working status		
Yes	71	27.6
No	186	72.4
Monthly income status		
Over income and expenses	36	14.0
Equal to the income and expenditure	122	47.5
Less than income expenditure	99	38.5
Chronic disease diagnosis		
Respiratory system diseases (COPD-Asthma)	56	21.8
Diabetes	75	29.2
Cardiovascular diseases (Heart Failure-Hypertension)	70	27.2
Renal Failure	42	16.3
Nervous system diseases (SVO, Epilepsy, Stroke)	14	5.4
Age mean	59.11±18.45	

Table 2. Distribution of Patients' Perception of Health Scale Total and Sub-Dimension, Rational Drug Use and Morisky Drug Compliance Scale Total Scores (N=257)

Scales and their sub-dimensions	Number of Items	Min.- Max.	$\overline{X} \pm SD$
Control center	5	5-25	13.72 ± 4.72
Certainty	4	4-20	10.70 ± 3.38
Self-awareness	3	3-15	6.83 ± 2.75
The importance of health	3	3-15	5.44 ± 2.47
HPS Total	15	15-75	36.70 ± 8.48
RDUS Total	21	21-105	67.28 ± 15.30
MMAS-8 Total	8	0-8	4.07 ± 2.34

Table 3. Comparison of HPS Total and Sub-Dimensions, Rational Drug Use Scale and MMAS-8 Scores According to the Descriptive Characteristics of the Patients (N=257)

	Perception of Health Scale Total and Sub-Dimension						
Descriptive Characteristics	Control center $\overline{X} \pm SD$	Certainty $\overline{X} \pm SD$	Self-awareness $\overline{X} \pm SD$	The importance of health $\overline{X} \pm SD$	HPS Total $\overline{X} \pm SD$	RDUS Total $\overline{X} \pm SD$	MMAS-8 $\overline{X} \pm SD$
Gender							
Female	12.94±4.72	10.28±3.41	6.63±2.46	5.46±2.28	35.33±7.63	68.86±15.97	4.11±2.42
Male	14.60±4.59	11.17±3.29	7.04±3.04	5.42±2.67	38.24±9.14	65.50±16.51	4.04±2.25
Test	t=-2.83	t=-2.11	t=-1.19	t=0.3	t=-2.77	t=1.65	t=-0.23
Significance	**p=0.00**	p=0.36	p=0.23	p=0	**p=0.00**	p=0.09	p=0.81
Marital status							
Married	13.28±4.30	10.45±2.99	6.96±2.50	5.32±.35	36.02±6.89	67.47±15.29	4.09±2.31
Single	15.66±5.90	11.79±4.58	6.27±3.63	5.93±2.92	39.66±13.07	66.43±20.21	4.02±2.45
Test	t=-3.20	t=-2.64	t=1.57	t=-1.53	t=-2.71	t=0.39	t=0.18
Significance	**p=0.01**	**p=0.01**	p=0.11	p=0.12	**p=0.00**	p=0.69	p=0.85
Education level							
Nonliterate	12.67±3.98	10.27±3.20	7.16±2.44	5.75±2.77	35.42±7.05	66.76±15.22	4.31±2.35
Literate	13.27±4.06	10.44±2.45	6.72±2.52	5.00±1.98	35.44±7.21	68.52±15.17	3.27±2.23
Primary education	14.18±4.97	10.86±2.84	6.88±2.78	5.75±2.77	37.69±6.90	66.37±16.16	4.24±2.36
High school	15.42±5.77	11.35±4.39	5.68±3.03	5.64±3.04	38.11±11.85	70.15±17.26	3.66±2.22
Undergraduate and Graduate	17.20±4.84	12.70±4.85	8.30±4.00	6.00±2.35	44.20±12.64	60.40±26.26	5.20±2.34
Test	KW=15.81	KW=5.00	KW=17.11	KW=2.21	KW=9.02	KW=1.27	KW=9.37
Significance	**p=0.00**	p=0.28	**p=0.00**	p=0.69	p=0.06	p=0.86	**p=0.05**
Working status							
Yes	15.29±5ç41	11.53±3.43	6.63±3.07	5.54±2.71	39.01±10.28	65.78±19.13	3.95±2.20
No	13.12±4.30	10.38±3.31	6.90±2.62	5.40±2.38	35.82±7.53	67.84±15.07	4.12±2.39

Test	t=3.35	t=2.45	t=-0.71	t=0.42	t=2.72	t=-0.90	t=-0.50
Significance	**p=0.01**	**p=0.01**	p=0.47	p=0.67	**p=0.00**	p=0.36	p=0.61
Monthly income status Over income and expenses	13.83±5.51	11.19±3.94	7.44 ±3.57	5.66±2.62	38.13±11.76	60.22±15.98	3.55±2.20
Equal to the income and expenditure	14.67±4.48	10.90±3.11	7.04 ±2.73	5.34±2.44	37.96±7.08	65.77±15.49	4.13±2.30
Less than income expenditure	12.52±4.47	10.27±3.46	6.35±2.36	5.48±2.47	34.63±8.35	71.70±16.24	4.19±2.42
Test	F=5.86	F=1.41	F=2.77	F=0.25	F=4.95	F=7.97	F=1.05
Significance	**p=0.00**	p=0.24	p=0.06	p=0.77	**p=0.00**	**p=0.00**	p=0.34
Chronic disease diagnosis							
Respiratory system diseases (COPD-Asthma)	14.08±5.07	10.23±3.72	6.37±2.88	5.30±2.66	36.00±9.54	70.80±16.91	3.82±2.60
Diabetes	13.60±5.05	10.96±3.53	7.10±2.93	5.92±2.36	37.58±9.10	64.66±15.44	4.25±2.14
Cardiovascular diseases (Heart Failure-Hypertension)	13.91±4.16	11.18±3.23	7.07±2.48	5.54±2.80	37.71±7.97	67.24±15.85	4.41±2.41
Renal Failure	13.92±4.27	9.78±2.90	6.64±2.59	4.69±1.60	35.04±6.45	65.26±14.84	3.73±2.19
Nervous system diseases (SVO, Epilepsy, Stroke)	11.42±5.40	11.57±2.73	6.57±3.05	5.21±2.29	34.78±8.22	73.42±17.24	3.50±2.27
Test	KW=4.90	KW=7.77	KW=4.33	KW=8.28	KW=4.39	KW=6.41	KW=3.54
Significance	p=0.29	p=0.10	p=0.36	p=0.08	p=0.35	p=0.17	p=0.47

Table 4. Relationship Between HPS Total and Sub-Dimensions of Patients and Rational Drug Use Scale and MMAS-8 Mean Points (N=257)

Scales and their sub-dimensions	RDUS	MMAS-8
Control center	r:-0.44	r:0.25
	p:0.48	p:0.69
Certainty	r:-0.058	r:0.23
	p:0.35	**p:0.00**
Self-awareness	r:-1.19	r:-0.02
	p:0.00	p:0.67
The importance of health	r:0.006	r:0.04
	p:0.91	p:0.45
HPS Total	r:-0.11	r:0.11
	p:0.79	p:0.06
RDUS Total	-	r:0.25
		p:0.00

Discussion

In order to reduce symptoms, prevent complications and maintain psychosocial well-being in chronic diseases, it is important for patients to use rational drugs and adapt to drug therapy. When we examine the literature, we think that the results of this study will contribute to the literature since there are no studies investigating the effect of rational drug use on health perception and drug compliance in chronic diseases.

In our study, it was found that rational drug use of patients was moderate, health perceptions and drug compliance were low level and rational drug use had a positive effect on drug compliance. The results of a study on health perception and compliance with drug treatment in patients with type II diabetes are similar to our study, and compliance of patients with drug treatment was found to be low in the study (Kucuk & Yapar, 2016). A meta-analysis by García-Pérez and colleagues found that the rate of individuals with diabetes without treatment compliance ranged from 6.9% to 61.5%, and the average of compliance with drug treatment was around 37.7% (García-Pérez et al., 2013). In a study with 149 hypertensive patients, the use of a minimum of 80% of the prescribed antihypertensive drug treatment shows that the patient is compatible with the drug. However, only 58% of the patients included in the study were found to be compatible with antihypertensive treatment (Gallagher et al., 2015). In the study of Oguzulgen et al., treatment compliance based on patient reporting was evaluated and low level of drug compliance was found in 74.2% of 31 adult patients with asthma (Oguzulgen et al., 2014). In another study, when compliance with inhaler corticosteroid therapy based on patient notification was examined, it was found that drug compliance was insufficient in 36% of patients (Cooper et al., 2015). The study by Aggarwal et al also reported that 60% of patients forgot to take their medication (Aggarwal et al., 2014). In some studies, it was determined that 40% -60% of patients were compatible with drug use (Koseoglu & Enc, 2016; Riegel et al., 2012). In a study conducted with 91 hypertension patients in a Medical Faculty Hospital, the compliance rate to antihypertensive drug treatment was found to be 84.6% (Mert & Kuruoglu, 2011). Although a few of the results of the study differed, we found that patients with a chronic disease generally had a low level of drug compliance. It can be said that the differences in the results of the studies conducted on drug compliance were due to the socio demographic characteristics of the patients. In line with these results, we believe that it is necessary for nurses to evaluate the health perceptions and drug compliance of individuals with chronic disease, to prevent the use of wrong drugs and to educate the patients for rational drug use.

In our study, it was found that patients with poor financial status had low levels of health perception and the difference between the groups was statistically significant. In addition to the diseases, the socio-economic situation was determined in a meta-analysis that caused bad health perception (DeSalvo et al., 2006). It is known that health perception affects a person's healthy lifestyle behaviors. We can say that the perception of health can also change because the socio-economic level affects one's healthy lifestyle behaviors.

In our study, we found that male patients had higher health perceptions than women and the difference between the groups was statistically significant. Doganay and Ucku examined the health perception of elderly patients according to gender and reported that the health perception of men was better than women (Doganay & Ucku, 2012). As a result of other studies, while women's perception of health was "bad", men's perception of health was "good" (Altay et al., 2016; Aidin & Karaoglu, 2012). In our study, no significant relationship was observed between gender and drug compliance. In parallel with our study, a study examining the compliance of patients with hypertension to treatment reported that there was no significant relationship between gender and treatment compliance (Mert & Kuruoglu, 2011). In contrast to our study, a study conducted with patients with asthma found that men's compliance with drugs was higher than women's (Ozdemir & Ozguclu, 2017). In a study conducted by Awodele et al. With DM patients, the compliance of women to treatment was found higher than men (Awodele & Osuolale, 2015). Other studies have found that women are more compatible with treatment than men (Cortuk & Kiraz, 2014; Ross et al., 2004). Although the results of the studies are different from each other, we see that women generally adapt to treatment more than men.

In our study, we found that there was no significant relationship between marital status,

working status, monthly income and disease diagnosis and compliance with treatment. The result of the study conducted by Ugrak et al., is similar to our study and reports that there is no relationship between marital status and rational drug use (Ugrak et al., 2015). In our study, while there was no relationship between economic status and treatment compliance, it was reported in a study that patients with poor economic status had lower levels of treatment compliance (Kara & Kara, 2019). In addition, it is generally thought that the severity of the disease increases the compliance of patients, but 65% of patients with difficult asthma are found to be incompatible with inhaler therapy (Murphy et al., 2012). For this reason, it can be said that demographics features differ in compliance with treatment and it may be relative to consider them as determining factors.

In our study, there was a significant relationship between education and drug compliance. In addition, it was determined that the group with higher education level got higher scores than the health perception scale and there was a statistically significant difference between the groups. In parallel with our study, Demirbag et al. reported that higher education status had positive effects on treatment compliance (Demirbag & Timur, 2012). In another study, it was found that high levels of education were important for adaptation to treatment and that drug compliance and quality of life were higher in the group with high levels of Education (Gun & Korkmaz, 2014). We can say that individuals who are at a higher level of education have higher treatment compliance as they adopt a healthier lifestyle behavior.

Conclusion and Suggestions: In our study, it was seen that rational drug use of the patients was moderate, and their health perceptions and drug compliance were low. It has been determined that rational drug use positively affects drug compliance. One of the most important factors in the control of chronic diseases is patient's compliance to drug treatment. In order to increase drug compliance, evaluation of existing problems related to drug compliance should be provided. In line with the results obtained from this study, in patients diagnosed with chronic disease, it is recommended to encourage individuals to regular health checks regarding disease and treatment management, to evaluate the drug compliance of individuals in each control in detail, to examine

the factors that may cause drug incompatibility and to make attempts for this.

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