Original Article

Perception of Treatment Satisfaction in Patients who Receive Warfarin Therapy in Turkey

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Abstract

Background: Physiological and psychological factors related to treatment may cause dissatisfaction.
Aims: This study was conducted using descriptive and correlational methodology to examine the perception of satisfaction by patients receiving warfarin.
Methodology: The study was conducted in a university hospital's cardiology and cardiovascular surgeon policlinics and clinics in Konya Area in Central Anatolia with a sample of 192 patients selected based on the study criteria. Data were collected using a 20-item questionnaire and the Duke Anticoagulation Satisfaction Scale (DASS), and analyzed using the SPSS 22 software through numbers, percentages, means, and independent *t*-test. The Mann Whitney U test and Kruskal-Wallis test were used for dual groups, and one-way variance analysis for triple groups. A multiple regression analysis evaluated the variables that influenced the satisfactory anticoagulant level. Ethics committee approval, institutions' permission, and patient consents were obtained before data collection.
Results: Participants' average age was 59.44 ± 13.50 years; of them, 66.1% were women, 82.8% were married, and 59.9% graduated from primary school. Their mean score was 61.71 ± 19.34 on the DASS, 25.27 ± 10.32 on limitations, 22.01 ± 0.65 on burdens and difficulties, and 14.4 ± 6.65 on positive effects subscales. There was no significant relationship between INR control and satisfactory anticoagulant efficacy in patients ($p>0.05$). Multiple regression analysis indicated that total DASS score and/or subscale scores were significantly affected by gender, educational level, place of living, cohabitants, income status, adverse event experience, use of drugs increasing warfarin's effect, duration of warfarin use, and the reason for using warfarin ($p<0.05$).
Conclusion: The results showed that patients were highly satisfied with warfarin use. Specialized anticoagulation clinics and a multidisciplinary anticoagulation management team including physicians, nurses, dieticians, and pharmacists should be established, periodic treatments should be provided, patient follow-ups should be led by a nurse, and treatment arrangements should be evaluated.

Keywords: nurse, perception of satisfaction, treatment, warfarin

Introduction

Thromboembolic diseases are among the major causes of morbidity and mortality. Warfarin, used orally for their prevention or treatment, delays coagulation (Opie & Gersh 2009).Warfarin, the most commonly used oral anticoagulant (OAC) both in the world and in Turkey (Goldstein 2013), usually requires laboratory monitoring due to its long-term use (Diana et al., 2015) and narrow therapeutic range. The most frequently used laboratory tests to monitor warfarin treatment are the prothrombin time (PT) and INR (international normalized ratio) value (Salam et al., 2007; Voukalis et al., 2016). The degree to which the target INR value can be maintained over time is expressed as the TTR (time in therapeutic range) and is calculated by proportioning the effective INR level, identified for the disease through the Rosendaal method (Rosendaal et al., 1993), to the total INR level. A TTR ratio is 60-75% moderate, 75% above ideal anticoagulant control (Cove & Hylek 2013; Matalqah et al., 2013). Lack of knowledge about

anticoagulant treatment (Koksal & Avsar 2015), drug-drug interactions (Nadkarni et al., 2012) and drug-nutrition interactions (Bajorek et al., 2006; Koksal & Avsar 2015) the need to go to the hospital for regular blood tests, limitations in diet and activities, and the concern about the possibility of bleeding (Cirak et al., 2013) are physiological and psychological factors leading to dissatisfaction among patients. Bleeding complications that increase with aging (Ozerdem et al., 2012),as well as multiple drug use, result in problems in anticoagulant treatment management and negative effects on quality of life (Bajorek et al., 2006). Previous studies have shown that patient adaptation to treatment is an important factor in evaluating patient satisfaction (Almeida et al., 2011; Carvalho et al., 2013; Samsa et al., 2004). In assessing nursing services, it is important to consider the long duration of the warfarin treatment, multiple factors influencing the effectiveness of the treatment, and the possible complications that might develop. Assessing patients' perception of treatment effectiveness is a priority for adaptation to the treatment.

Research questions and hypotesis

1. What are the anticoagulant satisfaction levels of patients receiving warfarin therapy?
2. Do anticoagulant satisfaction levels differ according to the sociodemographic status, health, disease and treatment characteristics of patients receiving warfarin therapy?
3. Do patients receiving warfarin treatment have anticoagulant satisfaction levels based on their TTR rates?

H_0: There is no difference in anticoagulant satisfaction levels of patients using warfarin according to sociodemographic status, health, disease and treatment characteristics and TTR rates.

H_1: There is difference in anticoagulant satisfaction levels of patients using warfarin according to sociodemographic status, health, disease and treatment characteristics and TTR rates.

Background: Physiological and psychological factors related to treatment may cause dissatisfaction.

Methodology

Design: This descriptive and correlational research was carried out in the cardiology and cardiovascular surgery polyclinic and clinics of a university hospital in Konya in September-December 2016.

Participants: The research population constituted of patients, who applied to the cardiology and cardiovascular policlinic and clinics of the hospital, were ≥18 years in age, had been using warfarin at least for six months, had had INR values checked at least four times, and had no communication problems or any psychiatric diagnosis.

Data Collection: Researchers collected the data from patients using the face-to-face method. Patients' latest INR values and at least the last three measurements retrospectively, were used to calculate the TTR ratio. INR values measured during periods of treatment interruption caused by warfarin overdose or surgical interventions were excluded from the study. The effective INR level was identified based on the individual patient's disease condition. A TTR ratio of 60% and above was considered effective. Data was collected using a 20-question questionnaire form developed by the researcher, the DASS, and the protocol numbers to identify patients' INR levels and TTR ratios.

The DASS was developed by Samsa et al.,(2004), Yildirim & Temel (2014) carried out the Turkish reliability analysis of the scale. The scale, a seven-point Likert type scale, has a three-factor structure, including 25 items and positive and negative (limitations, burden and difficulties) effects. In this study, DASS's Cronbach's Alpha reliability coefficient was 0.84: 0.82 for the sub-scale of "limitations"; 0.84 for the sub-scale of "burden and difficulties"; and 0.83 for the sub-scale of "positive effects". The minimum score one can receive from the scale is 25; the maximum is 175. High scores indicate a low quality of life and lower satisfaction level with anticoagulant drugs, therefore, more problems experienced by the patient.

Data Analysis: For statistical analysis of the data, a licensed SPSS 22 (IBM SPSS Inc., USA) package program was used. Number of groups and t-test for independent groups were used to compare the mean scores of the anticoagulant satisfaction scale and its sub-scales using the independent variables patient socio-demographic characteristics, disease, and drug use. In addition, the Mann–Whitney U-test and the Kruskal-Wallis test (advanced analysis is the Bonferroni-corrected Mann–Whitney U-test), and one-way variance analysis (ANOVA, its advanced analysis is the Turkey honestly significant

difference (HSD) test) for independent groups were used. Multiple regression (backward) analysis assessed the variables that influence the anticoagulant satisfaction level. The accepted statistical significance level was p<0.05.

Sample Size: In the calculation of the sample size, the expected effect level was moderate (0.15), the number of variables was 20, the power level was 90%, and the significance level was 0.05. As a result, the minimum sample size was 192 (Cohen et al, 2003). The random sampling method, which selects individuals applying to an institution, was used among the nonprobability sampling methods.

Results

The average age of participants was 59.44 years. Among the participants, 66.1% were female, 82.8% were married, 59.9% had graduated from primary education, and 91.7% were unemployed. Further, 69.8% had a mid-level income, 42.2% lived with their partners and children, and 56.2% lived in the city center (Table 1). Of the patients, 69.8% had a comorbidity; 92.7% of the participants used drugs other than warfarin continuously, and 49% used drugs that enhanced warfarin's effect. Participants' average length of warfarin use was 7.34 years, and the average weekly warfarin dose was 34.01 mg. In our study, the most frequently reported reason for warfarin use was mechanical valve prosthesis (MVP) (45.8%). Whereas 62.5% of the patients were not informed about warfarin use, most of those who had been properly informed (93.1%) had received the information from their doctors. Of the patients in our study, 50.5% experienced drug-related side-effects, and the most frequently experienced side-effect was bleeding (63.9%). It was found that 70.3% of the patients were below the effective TTR ratio, and the average TTR ratio was 42.74% (Table 2).

In the sub-scale of limitations, the mean satisfaction score for the patients younger than 40 years was significantly higher than that of the patients who were 65 years and older (p=0.021). In the sub-scale of positive effects, the mean score of patients who were 65 years old and older was significantly higher than that of the patients in the 40–64 years age group (p=0.030). The mean score of male patients was significantly lower than that of the female patients at a high level of significance (p=0.000). Female and male patients' mean scores for the positive effects sub-

scale in the anticoagulant satisfaction scale were similar (p>0.05, Table 1).

The group using warfarin for 10 years and more had significantly lower mean scores in the sub-scale of positive effects (p=0.042). The mean scores of patients who used warfarin to combat diagnosed atrial fibrillation (AF) were lower than that of all other patients (p=0.003). In the sub-scale of positive effects, the mean scores of patients using warfarin after AF diagnosis were significantly higher than that of the patients using the drug to combat effects of MVP (p=0.001). The total anticoagulant satisfaction score and the mean score of the limitations and burden/difficulties of the participants who had not reported side-effects were significantly lower at a higher level than that of the patients who had experienced side-effects from warfarin treatment (p=0.000). The distribution of patients' satisfaction scores showed no difference in terms of their TTR ratios (p>0.05) (Table 2).

Patients who were informed about the proper use of warfarin had significantly lower distribution of scores in the sub-scale of positive effects than the patients who did not receive any information (p=<0.008). The mean total score in the anticoagulant satisfaction scale of patients who did not use any other drugs that amplified warfarin's effect was lower at a significant level (p=0.048) than that of those who used drugs that increased warfarin's effects. The mean scores for the sub-scale of positive effects for patients who did not use any drugs that increased warfarin's effect was lower at a significant level (p=0.002) than that of the patients who used other drugs that increased warfarin's effects. (Table 2).

Multiple regression analysis (the backward method) was carried out to assess the effect of five independent variables, which influenced the total anticoagulant satisfaction scores of patients using warfarin. According to this analysis, the variable of education level did not have the sufficient effect (Table 3).

Four variables in patients explained the change (variance) in the anticoagulant satisfaction score at a rate of 20%. Based on the regression analysis, effective variables had the following orders of significance: experiencing side-effects and gender (p=0.000); place of residence (p=0.016); and using drugs that increase warfarin's effects (p=0.021) (Table 3). Three variables (gender (p=0.000); reason for using warfarin (p=0.001); and experiencing side-effects

(p=0.002)) explained the change in the sub-scale of limitations in the anticoagulant satisfaction scale at a rate of 16%. Three variables (side-effects (p=0.000); gender (p=0.004); and income status (p=0.019)) explained the change in the sub-scale of burden/difficulties in the anticoagulant satisfaction scale at a rate of 16%.

Four variables (education level (p=0.000); cohabitants (p=0.004); use of drugs that increase warfarin's effects (p=0.009); and the duration of warfarin use (p=0.016)) explained the change in the sub-scale of positive effects in the anticoagulant satisfaction scale at a rate of 16%.

Table 1. Comparison of mean scores of DASS and subscales according to sociodemographic characteristics of patients (n: 192)

Features	Number / percent	DASS Total score $\bar{x} \pm SD$	DASS Subscales		
			Limitations $\bar{x} \pm SD$	Burdens and difficulties $\bar{x} \pm SD$	Positive effects $\bar{x} \pm SD$
Age groups					
<40 age[a]	18(%9.4)	70,39±28.72	29.61±12.15	25.94±15.01	14.83±8.03
40-64 age[b]	100(52.1)	61.01±17.73	25.91±10.12	22.08±9.84	13.02±5.41
≥65 age[c]	74(%38.5)	60.55±18.42	23.35±9.83	20.95±10.41	16.26±7.39
KW (sd: 2)		*1.538*	*7.752*	*1.965*	*6.993*
p (Difference)		*0.464*	***0.021 (a>c)***	*0.374*	***0.030 (b<c)***
Gender					
Male	65(%33.9)	53.78±14.73	21.28±6.91	18.48±8.75	14.03±6.78
Female	127(%66.1)	65.77±20.19	27.31±11.17	23.81±11.11	14.65±6.59
t (sd: 190)		*4.685*	*4.608*	*3.638*	*0.606*
p		***0.000***	***0.000***	***0.000***	*0.545*
Marital status					
Married	159(%82.8)	60.73±19.54	24.49±9.60	21.69±10.68	14.55±6.69
Single	33(%17.2)	66.45±17.83	29.03±12.76	23.55±10.57	13.88±6.48
t (sd: 190)		*1.554*	*1.934*	*0.912*	*0.530*
p		*0.122*	*0.060*	*0.363*	*0.597*
Educational level					
No education[a]	54(%28.1)	66.59±17.49	24.19±9.56	24.67±10.28	17.74±5.83
Primary education[b]	115(%59.9)	61.18±19.80	26.28±11.05	21.57±10.63	13.34±6.67
High school[c]	12(%6.3)	62.00±19.19	25.25±8.56	23.25±11.79	13.50±7.06
University[d]	11(%5.7)	43.00±11.31	20.09±5.49	12.18±4.31	10.73±3.52
KW (sd: 3)		*19.253*	*4.321*	*18.735*	*24.695*
p		***0.000(a,b,c>d)***	*0.229*	***0.000 (a,b,c>d)***	***0.000(a>b,c,d)***
Working status					
Unemployed	176(%91.7)	61.76±19.33	25.10±10.12	21.97±10.71	14.69±6.76
Employee	16(%8.3)	61.25±20.05	27.13±12.56	22.44±10.33	11.69±4.60
U		*1376.000*	*1311.000*	*1354.000*	*1078.500*

p		*0.880*	*0.648*	*0.800*	*0.121*
Financial status					
Bad [a]	39(%20.3)	65.72±21.72	24.44±11.76	25.77±11.82	15.51±6.68
Middle	134(%69.8)	61.45±18.67	25.66±10.13	21.37±10.22	14.43±6.81
Good [b]	19(%9.9)	55.37±17.86	24.26±8.75	18.79±9.65	12.32±4.99
KW (sd: 2)		*3.950*	*1.237*	*6.768*	*2.677*
p		*0.139*	*0.539*	***0.034 (a>b)***	*0.262*
People who lived together					
With their partners[a]	75(%39.1)	60.05±17.15	23.16±7.85	20.73±9.88	16.16±7.11
With their partners and children[b]	81(%42.2)	61.64±21.75	25.81±10.95	22.78±11.46	13.05±6.03
With their children	20(%10.4)	68.65±19.02	30.60±15.13	24.30±9.94	13.75±6.18
Single/ extended family	16(%8.3)	61.19±15.80	25.75±7.79	21.19±10.92	14.25±6.68
KW (sd: 3)		*3.636*	*2.860*	*2.873*	*7.847*
p		*0.304*	*0.414*	*0.412*	***0.049 (a>b)***
p		***0.038 (a>b)***	*0.292*	*0.075*	*0.223*

U: Mann Whitney Analysis
KW: Kruskal Wallis test (advanced analysis; Bonferroni corrected Mann Whitney U test, Tukey HSD)
F: One way analysis of variance in independent groups (ANOVA, advanced analysis; Tukey HSD)

Table 2. Comparison of anticoagulant satisfaction levels according to the characteristics of patients with warfarin use (n: 192)

Features	Number / percent	DASS Total score $\bar{x} \pm SD$	DASS Subscales		
			Limitations $\bar{x} \pm SD$	Burdens and difficulties $\bar{x} \pm SD$	Positive effects $\bar{x} \pm SD$
The duration of warfarin use					
6 months- 3 years[a]	66(%34.4)	61.59± 20.67	24.68± 10.69	21.74± 11.12	15.17± 7.45
3<->10years[a]	73(%38.0)	61.42± 19.13	24.32± 9.53	21.92± 10.52	15.19± 6.47
10 years≤[b]	53(%27.6)	62.26± 18.23	27.32± 10.80	22.45± 10.43	12.49± 5.44
F (sd:2/189/191)		*0.031*	*1.473*	*0.069*	*3.215*
p (Difference)		*0.970*	*0.232*	*0.934*	***0.042 (a>b)***
Weekly warfarin dose					
>25 mg	59(%30.7)	63.39±16.46	25.95±10.15	22.92±9.68	14.53±6.53
25≤->≥35 mg	66(%34.4)	60.18±22.13	24.12±10.99	21.12±11.15	14.94±7.14
35 mg<	67(%34.9)	61.75±18.89	25.81±9.84	22.07±11.06	13.87±6.29
F		*0.426*	*0.625*	*0.441*	*0.439*

(sd:2/189/191)					
p		*0.654*	*0.537*	*0.644*	*0.645*
The reason for the use of warfarin					
AF[a]	62(%32.3)	60.21±17.79	21.77±7.94	21.65±10.50	16.79±7.02
Mechanical valve prosthesis[b]	88(%45.8)	61.35±20.01	26.32±10.78	22.26±10.70	12.77±5.52
Other reasons[c]	42(%21.9)	64.69±20.21	28.24±11.22	22.00±11.03	14.45±7.31
F(sd:2/189/191)		*0.698*	*6.052*	*0.060*	*7.070*
p		*0.499*	***0.003 (a<b,c)***	*0.942*	***0.001 (a>b)***
Experience of side effects of warfarin					
Yes	97(%50.5)	20.84±2.11573	11.75±1.19312	11.40±1.15798	6.62±0.67206
No	95(%49.5)	15.46±1.58576	7.84±0.80439	8.29±0.85044	6.70±0.68734
t (sd: 190)		*4.656*	*3.630*	*5.257*	*0.486*
p		***0.000***	***0.000***	***0.000***	*0.627*
TTR ratio					
>%60	135(%70.3)	63.84±20.22	26.23±10.77	23.02±11.12	14.59±6.68
%60≤->%75	42(%21.9)	55.36±14.17	22.83±8.31	19.17±8.03	13.36±6.76
%75≤	15(%7.8)	60.40±20.78	23.47±10.46	20.80±11.83	16.13±5.88
KW (sd: 2)		*5.456*	*3.210*	*3.755*	*3.292*
p		*0.065*	*0.201*	*0.153*	*0.193*
Drug use information availability					
Informed	72(%37.5)	61.85±21.30	26.42±10.39	22.54±11.49	12.89±5.64
Uninformed	120(%62.5)	61.63±18.15	24.58±10.26	21.68±10.16	15.37±7.04
t (sd: 190)		*0.074*	*1.193*	*0.539*	*2.680*
p		*0.941*	*0.234*	*0.590*	***0.008***
Drug use status					
Enhancing effect drug users	94(%49.0)	64.53±20.63	25.28±10.24	23.28±11.67	15.98±7.08
Enhancing effect not drug users	98(%51.0)	59.01±17.70	25.27±10.45	20.79±9.49	12.96±5.86
t (sd: 190)		*1.993*	*0.008*	*1.619*	*3.211*
p		***0.048***	*0.994*	*0.107*	***0.002***

t: t test in independent groups.
KW: Kruskal Wallis test (advanced analysis; Bonferroni corrected Mann Whitney U test, Tukey HSD)
F: One way analysis of variance in independent groups (ANOVA, advanced analysis; Tukey HSD)

Table 3. The effect of independent variables on patients' anticoagulant satisfaction score (DASS total score): Regression analysis results (n= 192).

Independent Variables	B	S. Error	Beta (β)	t	p	95% Confidence Interval	
(Constant)	79.34	8.,40		9.443	0.000	62.76	95.91
Experienced side effects	-11.01	2.51	-0.29	-4.381	0.000	-15.97	-6.05
Gender	10.34	2.67	0.25	3.868	0.000	5.07	15.61
Place of residence	-3.99	1.65	-0.16	-2.420	0.016	-7.24	-0.74
Effect-enhancing drug intake	-5.83	2.50	-0.15	-2.331	0.021	-10.77	-0.90
Education level	-1.90	1.90	-0.07	-1.000	0.318	-5.65	1.85

The dependent variable: DASS Total Score
R:0.47   Adjusted R^2:0.20   F:12.910   p:0.000   Durbin Watson: 2.05

Discussion

Our study examined the perception of satisfaction of persons using varfarin, according to their socio-demographic, health, and treatment-related characteristics. The average age of our participants and the proportion of female participants in our study are similar to those in previous studies (Carvalho et al., 2013; Yildirim & Temel 2014; Naderiravesh et al., 2015; Mayet 2016; Eltayeb et al., 2017). Increasing AF and thromboembolic diseases in line with aging, and encountering diseases treated with warfarin more in women support our findings. The most frequently reported reason for warfarin treatment was MVP. These reasons are considered as variables (Samsa et al., 2004; Yahaya et al., 2009; Ávila et al., 2011; Mohamed et al., 2015; Eltayeb et al., 2017).

In our study, patients' effective TTR ratios were low. Many studies carried out in Turkey and around the world obtained similar results (Yahaya et al., 2009; Alisir et al., 2013; Matalqah et al., 2013; Mayet, 2016). The study by Naderiravesh et al., (2015) determined that 73.5% of the participants had INR values in the therapeutic range. This situation was explained by the fact that 38% of the individuals participated in the warfarin therapies regularly. Insufficiency of standard procedures could be the reason for not being able to reach the targeted INR-TTR ratios.

In our study, male patients' total score of satisfaction, and their mean score in the two sub-scales, limitations and burden/difficulties, were significantly lower than that of the female patients. Women experienced problems more, whereas male patients perceived the treatment more positively (Salam et al., 2007; Eltayeb et al., 2017). In contrast, other studies did not find any relationship between commitment to the treatment and satisfaction (Naderiravesh et al., 2015; Yildirim & Temel 2014).

The scholarly literature report that warfarin's side-effects influence patients' satisfaction in the treatment and life quality in a negative way (Almeida et al., 2011; Mert et al., 2016; Salam et al., 2007; Yildirim & Temel 2014). In our study, patients with a story of bruising and bleeding had lower satisfaction in their treatments and perceived adverse effects more than patients who did not have these problems. Therefore, managing the treatment of patients who experience side-effects is more difficult.

Patients, who did not use any drugs that increased warfarin's effects, had better satisfaction in the anticoagulant treatment and perception of its positive effects than that of those who used drugs that increased warfarin's effects. Yildirim and Temel (2014) stated that the

problems of individuals receiving anticoagulant treatments were not influenced by the drug type. Patients mostly experience bleeding and/or bruising as a side-effect of the OAC drug use. It is believed that the increase in possibility of such hemorrhagic side-effects affects patient satisfaction and life quality negatively.

Patients, who used warfarin due to the AF diagnosis, perceived limitations less than others did. These patients experienced positive effects at a significantly lower level than patients using warfarin due to MVP. The scholarly literature determined that AF/arrhythmia patients experienced satisfaction and limitations less than other patients (valve problems and deep venous thrombosis (DVT)) (Yildirim & Temel, 2014). The study by Carvalho et al., (2013) showed that individuals with AF and DVT/pulmonary thromboembolism had lower satisfaction levels than patients using warfarin due to MVP. Higher target INR range in patients with MVP may increase the rates of complications such as bruising/bleeding. This in turn leads to more limitations in these patients. Patients are not being able to sustain an effective INR level might lead to valve thrombosis, which means that treatment may be extended to a surgery again. Being aware of this condition, patients may become more committed to the treatment with caution, and more satisfied with the treatment through a feeling of trust.

Patients' total scores in the anticoagulant satisfaction scale and the sub-scale of positive effects decreased as patients' income status increased. In the advanced analysis, it was seen that patients with better income level encountered burden/difficulties less than the patients with low income at a significant level. Warfarin therapy is expensive, because it is a long-term treatment process that requires laboratory controls. Previous studies proved that costs related to the treatment influenced commitment to the treatment (Naderiravesh et al., 2015), and patients were more determined in treatments where the costs were lower due shorter duration of anticoagulation (Ávila et al., 2011).

Our study determined that patients with undergraduate degrees had higher satisfaction levels in the anticoagulant treatment. At the same time, their mean scores in the burden/difficulties sub-scale were lower than other groups. They embraced the responsibility of the treatment and experienced difficulties less. In contrast, illiterate

patients experienced positive effects of the treatment less than the other groups did. This finding is natural, because the sub-scale of positive effects is directly related with knowledge. Accordingly, patients with higher education levels were more informed (Dogu & Acaroglu, 2016) and they were better adapted to the treatment, because they were well-informed about the complications of the treatment (Sharaf et al., 2017). Better knowledge, higher satisfaction level, and less concern are related with better adaptation to the treatment and better INR controls (Wang et al., 2014). High education level enables patients to comprehend the trainings offered to them better and to communicate more easily. Besides, educated patients have the skills to obtain important information, which can increase their awareness and perception levels, about their diseases from other sources. Conversely, patients with secondary education or above were approximately 8 times happier than patients with lower education levels (Eltayeb et al., 2017).

Findings of our study showed that patients living with their partners and children perceived positive effects of the warfarin treatment more than the patients living only with their partners. Compared to married patients, patients who lived alone had higher mean scale and sub-scale scores. This finding illustrates that they experienced burden and difficulties more, which decreased their perception of satisfaction in the treatment (Yildirim & Temel 2014). Married patients were better at anticoagulant control than the single patients were (Mohamed et al., 2015). In fact, most of the time partners were better informed and they were more careful about following the treatment diet (Dantas et al., 2004; Naderiravesh et al., 2015). There is a correlation between commitment to warfarin treatment and family members. Support from children as well as partners made patients perceive the treatment in a more positive way.

The duration of warfarin use affected the sub-scale of positive effects in the anticoagulant satisfaction scale. The advanced analysis determined that patients who had been using the drug for 10 years and more experienced positive effects more than the patients using the drug for less than 10 years. Similar studies revealed that individuals who received the treatment for less than a year perceived the positive effects of the treatment less (Almeida et al., 2011; Salam et al., 2007; Yildirim & Temel, 2014). Weekly dose of

warfarin use did not have a significant effect on patients' anticoagulant satisfaction.

Patients' accompanying diseases as well as using other drugs did not cause significant differences between their total score in the anticoagulant satisfaction scale and their mean scores in the three sub-scales. Studies underlined that INR effectiveness worsened as the number of drugs increased. These studies emphasized that warfarin-drug interaction could be seen more (El Ghousain et al., 2014; Hassan et al., 2013). The study by Zhao et al., (2017) pinpointed that patients with cardiovascular diseases had high commitment to the treatment. Accordingly, this situation was due to symptomatic patients and their feelings of urgency to follow medical advice. According to the study by Almeida et al., (2011) accompanying disease decreased patient's satisfaction in the treatment, while in the study by Carvalho et al., (2013) the situation was just the opposite. For the latter study, it would be easier for a person, who is already used to taking drugs on a daily basis for additional chronic situations, to add another drug on her list than to make taking drugs a new habit for her. Therefore, it argued that such a situation could increase the patient's treatment satisfaction. However, it should also be considered that additional drugs and the need for using health services for chronic diseases may decrease patient satisfaction due to increased risk of complications. Within this context, it could be claimed that the effects of additional drug use and accompanying chronic disease on treatment satisfaction are variable.

Our study found that the difference between total score in the anticoagulant satisfaction scale and the mean score received from the sub-scales were not significant in terms of patients' TTR ratios. The study by Yildirim and Temel (2014) determined that patients who did not have their INR test regularly went through burden and difficulties more. However, in our study we only included patients, who were controlled for a certain period of time, in order to calculate their TTR ratios. Similarly, in the study by Mayet (2016), there was no relationship between commitment to the anticoagulant treatment and anticoagulant control. Being well informed about treatment is associated with good satisfaction and adaptation to warfarin treatment, good INR control (Wang et al., 2014).

In our study, patients who received information about drug (warfarin) use perceived positive effects more than those who did not receive any information. However, different groups had similar perceptions of anticoagulant satisfaction and adverse situations. For patients using OAC, education on drug use increased their knowledge on the warfarin treatment significantly (Dagci & Oren, 2015, Dogu & Acaroglu, 2016; Ozcan et al., 2013), and guided them in changing their behaviors (Dogu & Acaroglu, 2016). At the same time, receiving adequate education on the treatment increased elderly patients' treatment satisfaction and influenced their life quality (Mert et al., 2016).

According to the regression analysis, patients' experience of side-effects, gender, place of residence, and the use of drugs increasing warfarin's effect were influential on the patients' total score in the anticoagulant satisfaction scale.

Conclusion: Overall, any chronic disease requires access to treatment and care services, continuing the treatment, the burden of disease due to the complications of the treatment, and expenses such as hospitalization. In our study, women encountered such difficulties and adverse situations more. Development of treatment-related side-effects are considered as a part of adverse situations that decrease patient satisfaction. For patients who received warfarin treatment, the difficulty and cost of going to the hospital for the INR test had a negative effect on their treatment satisfaction. There didn't find any relationship between INR effectiveness and treatment satisfaction. Using drugs that increase warfarin's effect strengthen the risk of complications and decrease treatment satisfaction. Low education level and therefore the difficulty of comprehending one's own health situation are factors, which diminish treatment satisfaction and influence patients' perception and continuation of the treatment. We believe that strengthening patients' beliefs in the necessity of receiving this treatment may prevent intentional or unintentional dissonance in the treatment, maintain continuity in the treatment, and increase patients' satisfaction. Thus, providing coordination and periodic training on the treatment by a trustable team of doctors and nurses could be an important contribution in reaching higher treatment satisfaction levels.

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