Research Article

Knowledge of, Satisfaction with and Adherence to Oral Anticoagulant Drugs among Patients in King Fasial Hospital; Taif, Kingdom Saudi Arabia

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ABSTRACT

Adequate knowledge, satisfaction and adherence to oral anticoagulant treatment are important measures that decrease morbidity and mortality. The objective of the study was to assess patients' knowledge and measure their satisfaction with and adherence to oral anticoagulant treatment and to identify predictors of the three studied domains. A cross-sectional study was conducted at King Faisal Hospital, Taif, KSA during December 2014 – January 2015, whereby two representative samples of patients on oral anticoagulant treatment were recruited. Data was collected through face-to-face method. Data was processed using SPSS. Two hundred and eight patients (group A) were recruited to assess patients' knowledge about oral anticoagulant treatment and 248 (group B) to measure satisfaction and adherence to treatment. In both samples, nearly 60% of the patients were females and approximately two third of them were aged > 50 year. Overall, 31 (14.9%) of the patients were classified as having adequate knowledge about oral anticoagulant treatment. Multivariable analysis showed that patients attained intermediate educational level and above were more knowledgeable; [adjusted OR 4.6 (1.8-11.8), (*P*= 0.002)]. Of all patients 63.7% were satisfied with anti-clot treatment. Univariable analysis showed significant difference in satisfaction between female and male patients 56.2% vs. 74.5%, respectively; [adjusted OR 2.3 (1.3-4.0), (*P* = 0.003)]. The rate of adherence to oral anticoagulant treatment was 35.9%.Health education is badly needed to upgrade patients' knowledge about oral anticoagulant and patients should be motivated to increase their level of satisfaction and adherence to therapy.

Keywords: Knowledge, Satisfaction, Adherence, Oral Anticoagulant, Saudi Arabia.

INTRODUCTION

Anticoagulant therapy is used by millions of patients worldwide due to its proven efficacy and safety.[1] Clinical conditions for its use include prevention of systemic embolism in patients with tissue or mechanical prosthetic heart valves or a trial fibrillation, prevention of acute myocardial infarction (AMI) in patients with peripheral arterial disease, prevention of stroke, recurrent infarction, or death in patients with AMI, and prevention of myocardial infarction (MI) in men at high risk.[2]

Regular blood testing, lifestyle limitations (e.g. restrictions on diet and activities) and fear of bleeding are all characteristics of anticoagulant drugs which can potentially reduce both patients satisfaction and their quality of life.[3] Positive perceptions are related to a better control of the oral anticoagulation therapy and better health-related quality of life (HRQoL).[4] On the other hand, the reduction of the number of oral anticoagulation therapy complications associated with improved HRQoL.

Researchers explored various aspects of HRQoL among patients on anticoagulation therapy, such as limitations due to medication use, hassle and burden, and positive and negative psychological impact. The occurrence of a bleeding episode may cause a significant decrease in health perception.[5] The HRQoL of patients using oral anticoagulant (OAC) treatment and the quality of OAC

therapy have been associated with socio-demographic and clinical variables. Bleeding event, the presence of other diseases, drug interactions, education level, patient's age and duration of treatment have an impact on the quality of life perception.[6] Patients with low educational level feel that OAC therapy limits their daily activities and it is considered a source of worries.[7]

Evaluation of patients' knowledge of OAC therapy is considered as the first step towards improving the quality of anticoagulation therapy and patient care in order to develop interventions to educate the patients. Previous study indicated that insufficient knowledge concerning anticoagulants was associated with bleeding complications.[8] A positive correlation was documented between patients' warfarin knowledge and the control of INR values within the target range.[9] Smith[10] found a poor general understanding of medication, particularly among patients at highest risk of stroke. Patients' level of knowledge of the adverse effects of anticoagulant medication was found to be suboptimal.[11] Among elderly patients; advancing age, lower family incomes, and limited health literacy, were found to be inversely affect their knowledge about warfarin.[12]

Adherence to the prescribed anticoagulation therapy is one of the most important determinants of its effectiveness and safety.[13] Adequate adherence is significantly associated with anticoagulation control.[14] Kim[15] found that knowledge about warfarin and self-

efficacy exerts significant influence on medication adherence.

In this study, we attempted to measure patients' knowledge, satisfaction and adherence to OAC therapy and to identify socio-demographic factors that predict the three studied domains.

MATERIALS AND METHODS

A cross-sectional study was conducted in Anticoagulant Clinic at King Faisal Hospital, Taif, Saudi Arabia during December 2014–January 2015.

All adults (> 18 year) patients on oral anticoagulant therapy (for a duration of at least 2 months) due to any clinical indication were recruited.

Patients incapable to communicate verbally, who were previously diagnosed with mental diseases, patients refused to participate in the study were immediately excluded.

Convenience method of sampling was adopted. Pharmacy students collected the data through face-to-face interview method using structured questionnaires. The questionnaire to assess patients' knowledge was composed of two sections.

The first part was designed to collect data about patients' background characteristics (age, gender, nationality, educational level, and indication for oral anticoagulant).

The second part was designed to evaluate patients' knowledge about oral anticoagulant therapy using Oral Anticoagulant knowledge (OAK) test.

The test is composed of 20 items, three of which were omitted due to either cultural reasons or deemed to be difficult for the patients. The items of the test were translated into Arabic language using forward-backward translation method in collaboration with English Language Center, Taif University, Kingdom of Saudi Arabia. To assess patient's knowledge, each correct answer was given a score 1 and the incorrect one was given zero score.

Scores were summed to give a total score, ranging from 0 to 17. The patient was considered as having an adequate knowledge if he/ she scored equal or more than 70% of all the questions correctly. The knowledge was considered inadequate if the patient's score was below the cut-off point.

The questionnaire to measure satisfaction and adherence composed of three parts: The first part was designed to collect data on patients' background characteristics. The second part was designed to collect data on patient satisfaction with oral anticoagulant therapy using the Anti-Clot Treatment Scale (ACTS).

ACTS is a 17-item patient-reported measure of satisfaction with anticoagulant treatment (ACT). It includes 13 items about the burdens of ACT (including a 12-item Burdens scale and one global question about

burdens) and 4 items about the benefits of ACT (including a 3-item Benefits scale and one global question about benefits).

The tool was translated into Arabic language as per Mapi Research Institute guidance, which involves forward-backward translation with a pilot testing. The patients were asked to rate their experiences of anticoagulant treatment during the past 4 weeks on a 5-point scale of intensity (1 = not at all, 2 = a little, 3 = moderately, 4 = quite a bit, 5 = extremely). Reverse coding was adopted for the calculation of burden scale in order that higher scores indicated higher satisfaction.

The Burden subscale score took values between 12 and 60 and the Benefit subscale score ranged from 3 to 15 to end up with a total range of 15-75 for all the seventeen items. The patient was considered satisfied with anti-clot treatment if he/she scored above the mean score for all patients and dissatisfied if the score was below the cut-off point. Medication non-adherence was measured using the self-reported 4-item Morisky scale[16], which assesses patients' forgetfulness about taking medications, carelessness about taking medications, stopping medication when feeling better and stopping medication when feeling worse.

Questions were answered as 'yes' and 'no' and scored one point for 'yes' and zero point for a 'no' response. Scores were summed to give total score, ranging from 0 to 4. Non-adherence was defined as a score greater than zero.

Percentages and means were used to describe the variables. A multivariate model was developed to identify predictors of knowledge, satisfaction and adherence to oral anticoagulant therapy.

Crude logistic regression analyses were performed as initial steps of qualifying covariates to be included in multivariate logistic regression analyses. All covariates with p-values <= 0.25 were included in the model. P value of < 0.05 was considered to be statistically significant. All statistical tests were conducted by using the Statistical Package for Social Sciences (SPSS) version 21. Ethical approval for the conduction of the study was obtained from the Research and Ethical Committee, King Faisal Hospital, Taif, KSA.

RESULTS

Patients' Background Characteristics

Two groups of patients were included in the study. Two hundred and eight patients (group A) were recruited to assess patients' knowledge on OAC and 248 (group B) to measure satisfaction and adherence to these drugs. As presented in Table 1 the features of both samples were more or less resembled each other. Nearly 60% of the patients were females and approximately two third of them were aged > 50 year. The majority were town dwellers. In both groups OAC was indicated mainly for mitral valve replacement and atrial fibrillation.

Table 1: Patients' background characteristics of Group (A) & (B)

Background characteristic	Group A		Group B	
	Frequency	Percentage	Frequency	Percentage
Gender				
Male	84	40.4	102	41.1
Female	124	59.6	146	58.9
Age in year				
≤ 50	76	36.5	80	32.3
> 50	132	63.5	168	67.7
Nationality				
Saudi	194	93.3	248	100
Non-Saudi	14	06.7	0	0
Residence				
Town	174	83.7	216	87.1
Outside town	34	39.9	032	12.9
Educational Level				
Intermediate& above	83	39.9	49	19.8
Below intermediate	125	60.1	199	80.2
Indication for warfarin				
Mitral valve replacement	87	41.8	89	35.9
Atrial fibrillation	43	20.7	62	25.0
Deep vein thrombosis	32	15.4	33	13.3
Stroke	11	05.3	18	7.3
Pulmonary embolism	9	04.3	16	06.5
Others	26	12.5	30	12.1
Total	208	100	248	100

Table 2: Correct Responses to Oral Anticoagulants Knowledge Test (OAK)

Item	Correct answer n=208	
	Frequency	Percentage
Consequences of missing one dose of OAC	92	44.2
Circumstances to contact the physician or healthcare provider	168	80.8
Effect of eating a large amount of leafy greens vegetables	54	26.0
Vitamins interacts with OAC	17	8.2
When is it safe to take a medication that interacts with OAC	34	16.3
What is the PT/INR test	185	88.9
Indication for OAC	176	84.6
Consequence of a PT/INR value below the "goal range"	88	42.3
Effect of concomitant use of aspirin or other non-steroidal anti-inflammatory medications	105	50.5
Circumstances to seek immediate medical attention	59	28.9
Effect of skipping even one dose of OAC	91	43.8
Frequency of testing PT/INR value after dose adjustment	184	88.5
Important circumstances to monitor for signs of bleeding	143	68.8
The best action to be taken in case of missing a dose of OAC	184	88.5
Diet components and balance	132	63.5
Actions taking on the day of checking PT/INR	54	26.0
Consequences of PT/INR value above the "goal range"	143	68.8

Table 3: Determinants of knowledge on Oral Anticoagulants

Covariates	% with good knowledge	n	Univariable analysis crude OR(95% CL)	P value	Multivariable analysis adjusted OR (95% CL)	P value
Gender Female Male	12.1 19.0	124 084	1 1.7 (0.8-3.7)	0.170		
Age group in year > 50 < 50	14.5 15.2	132 076	1 1.0 (0.4-2.1)	0.895		
Residence Rural Urban	05.9 16.7	034 174	1 3.2 (0.7-14.1)	0.124		
Educational level Below intermediate Intermediate & above	7.2 26.5	125 083	1 4.6 (2.0-10.7)	<0.001	1 4.6 (1.8-11.8)	0.002
Total	100	208				

Table 4: Determinants of satisfaction with Oral Anticoagulant Therapy

Covariates	% with good knowledge	n	Univariable analysis crude OR (95% CL)	P value
Gender Female Male	56.2 74.5	146 102	1 2.3 (1.3-4.0)	0.003
Age group in year < 50 >50	58.8 66.1	80 168	1 0.7 (0.4-1.3)	0.263
Residence Urban Rural	63.4 65.6	216 032	1 0.8 (0.4-2.0)	0.809
Educational level Intermediate& above Below intermediate	62.8 67.3	199 49	1 1.2 (0.6-2.4)	0.555

Patients' Knowledge about Oral Anticoagulant Therapy

Responses to individual items of OAK test showed low patients' knowledge of the vitamins that interact with OAC drugs, when is it safe to take a medication that interacts with OAC, actions to be taken on the day of checking PT/INR and the effect of eating a large amount of leafy green vegetables; 17 (8.2%), 34 (16.3%), 54 (26%) and 54 (26%) respectively. Percentages of the correct responses to the knowledge test were shown in Table 2.

The mean score for knowledge was 9.1 ± 2.5. Overall, 31 (14.9%) of the patients were classified as having adequate knowledge on OAC. Multivariable analysis showed that patients attained intermediate educational level and above were more knowledgeable compared with participants with lower education status [adjusted OR 4.6 (1.8-11.8), (*P* = 0.002)]. Determinants of patients' knowledge were presented in Table 3.

Satisfaction with Oral Anticoagulant Therapy

Overall, 142 (57.3%) considered that anticoagulant therapy constituted a burden to them.

In this respect, females were significantly more than males (52.1% v.s 29.4%) thought it was a burden [adjusted OR 2.6 (1.5-4.4), (*P*<0.001)]. On the hand, 200 (80.6%) patients considered that anti-clot treatment added benefit to their lives.

The mean level of satisfaction was 62.3 ± 10.3. Out of all patients 158 (63.7%) were classified as satisfied with anti-clot treatment. Univariable analysis showed significant difference in satisfaction between female and male patients 56.2% vs. 74.5%, respectively; [adjusted OR 2.3 (1.3-4.0), (*P* = 0.003)].

Adherence to Oral Anticoagulant Therapy

The rate of adherence to OAC was 35.9%. No single patients' background characteristic was found to be associated with adherence to OAC.

DISCUSSION

The major aim of this study was to measure patients' knowledge of, satisfaction with and adherence to oral anticoagulant therapy. To our knowledge the study is unique as it is the first of its type to be conducted in Saudi Arabia. The analysis of the demographic variables of the patients recruited in both samples revealed important findings need to be highly considered in the context of the studied domains. These include; advanced age, low educational level and the majority of the patients with disease states that required chronic use of oral anticoagulant.

The major goal of the anticoagulation clinic is to help patients manage their anticoagulation medications.[17] Provision of education to the patients and assessment of their compliance to treatment are considered as important elements beside others to accomplish this goal.[18]

Assessment of patients' knowledge in this clinic showed relevant gaps in patient education about oral anticoagulants. Deficit in knowledge was clearly documented in items like; vitamins that interact with anticoagulants, safety of taking medications that interact with warfarin and the consequences of either of a PT/INR value below or above the "goal range".

Other researchers identified that patients poorly understood symptoms relevant to over-anticoagulation and the effects of alcohol and vitamins on oral anticoagulants.[19]

The participants in this study also ignored the effect of eating a large amount of leafy greens vegetables and diet components and balance.

Eating a balanced diet with appropriate levels of vitamin K represents a challenge for patients on oral anticoagulation that required planning, effort and time.[20]

As shown by regression analysis patient's educational level highly influenced overall knowledge score. Educated patients have better chances to come across information about oral anticoagulants from different sources and understand this information easily.

A recent German study showed more or less the same deficit in knowledge observed in the current study with older age and lower educational level as important determinants of patient's knowledge.[21] A considerable number of participants in that study were unaware of the dietary recommendations, did not know which non-prescription analgesic is the safest and many of them would not recognized important emergency situations.

Many reasons may justify the identified gaps in patients' knowledge documented in this clinic. The most important factor is the absence of standardized health education program. In addition, the short time devoted to each patient and poor patient counseling is also contributory factors. As observed, routinely most patients are seen in one day during the week for follow-up visits. A considerable number of patients were females and elderly most of them depend on their family members to know the details of their treatment, which may affect their level of knowledge.

The best strategy for an education program about oral anticoagulants has not been determined up to now.[22] There are great variations in the published studies of patient education related oral anticoagulant in strategy, core content, and instrument use for testing knowledge.[23] We believed that for patient education to close these gaps in knowledge it should be tailored to each case. Education should be provided in a simplified manner that takes into account the cultural beliefs and both patient preference and acceptance. Importantly, the components of education should be provided by a multidisciplinary team of healthcare providers. For example, patient poor knowledge on the items related to the pharmacology of warfarin or its interactions with other medications can be best improved by health education provided by a pharmacist. Clinical pharmacist helps in the provision of educational information regarding therapy through effective counseling, education about drug interactions, adjustment of dosing, improves patient's knowledge and their compliance to medications.[24] A recent study documented an improvement in patients' knowledge about oral anticoagulants by pharmacist's counseling despite of health literacy level.[25]

Nearly 64% of the participants in the current study were classified as satisfied with their anti-clot treatment, with more than 57% of them considered that the treatment constituted a burden to them. Importantly, items in the burden subscale should be considered thoroughly and discussed with the patients to relieve any problem or misconception. In addition, the observed difference in satisfaction between both female and male patients should be explored in-depth to identify the factors that lead to the increased level of dissatisfaction among females. In the above mentioned study[4], researchers identified the association between different patients' characteristics with negative perceptions like; female sex, patients with less than 1 year of therapy, those not satisfied with medical attention and patients modified their lifestyle. Positively the results showed that above 80% of the patients considered anticoagulation therapy added benefit to their lives. This finding can be utilized in motivating the patients and reverse dissatisfaction observed in the burden subscale score.

In some settings, anticoagulation clinic management is alternated with international normalized ratio self-testing with online remote monitoring and management. This

practice has been found to be more convenient, less complicated, the patients more satisfied with their anticoagulation treatment, and it saves patients time and money compared with clinic management.[26]

The rate of patients' adherence to oral anticoagulant therapy was found to be 35.9%. Patients on oral anticoagulant treatment have many difficulties to maintain adequate adherence to treatment regimens, which may result in significant effects on anticoagulation control.[27] Adherence to chronic medication is a complex process with multiple factors that can affect the patients' commitment to therapy. Fewer numbers of studies have directly investigated the factors that may influence patients' adherence to oral anticoagulants.[28] In the current study no single patients' background characteristic was found to be associated with adherence. Future research in adherence domain should focus on other factors like different psychosocial factors, patient - provider communication issue and health literacy to explore reasons for non-adherence. In this clinic, a substantial effort is needed in the identification of these factors and after that in developing strategies to tackle this problem.

This study has some limitations. Firstly, the cross–sectional nature of the study may subject it to selection bias, but the selection criteria excluded all patients with cognitive impairment and patients refused to participate. Secondly, the study was conducted in one hospital in one city in Saudi Arabia; this limits the generalizability of the results to all patients. Future research should select patients from different hospitals in the region or from the entire country. Finally, patients' adherence to treatment was measured only by a self-reported method this can be overcome in the future by combining more than one method to exactly measure patients' adherence.

CONCLUSION

Patients on oral anticoagulant treatment in this setting were poorly educated about treatment and had deficits in their knowledge of important information that may directly affect the clinical outcome of therapy. Over sixty percent of the patients were satisfied with their anti-clot treatment, with high level of satisfaction among male patients compared to females. Adherence to treatment was sub-optimal. Substantial efforts are needed urgently in this clinic to develop and implement intervention program to upgrade patients' knowledge and motivating the patients to increase their satisfaction and improve adherence to treatment.

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