Knowledge Regarding Oral Anticoagulation Therapy among Patients with Stroke and Those at High Risk of Thromboembolic Events

Annu Alphonsa, MSc,* Kamlesh K. Sharma, MSc,* Gautam Sharma, MD, DM,† and Rohit Bhatia, MD, DM, DNB‡

Background: Apart from atrial fibrillation, indications for oral anticoagulation common in our clinical practice include rheumatic heart disease and mechanical heart valve replacement. Evaluation of current patient knowledge regarding oral anticoagulation therapy (OAT) is the first step in improving the quality of anticoagulation therapy and patient care. The aim of the present study was to assess the knowledge regarding OAT among patients with stroke and those at high risk of thromboembolic events in a tertiary care hospital in India. *Methods:* A descriptive cross-sectional design was used; 240 patients on OAT because of various indications (mechanical heart valve replacement, rheumatic heart disease, atrial fibrillation, and stroke) attending the neurology and cardiology outpatient clinics and inpatient services were recruited. A structured self-developed questionnaire was used to assess the knowledge in these patients. *Results:* Most patients (62.9%) were ignorant about the target prothrombin time/international normalized ratio (PT/INR) levels with only 30% having their recent INR within the target range; 50% of the patients had a poor knowledge score, and the knowledge gap was most prominent in the domains of dietary interactions followed by drug interactions, adverse effects, and PT/INR monitoring. Knowledge score also had a significant association with gender, education, monthly income, and place of residence ($P < .05$). *Conclusion:* Patient's knowledge about OAT was suboptimal. The findings support the need for educational interventions to improve the knowledge regarding OAT and, thereby, achieve an appropriate and safe secondary prevention of stroke. **Key Words:** Knowledge—oral anticoagulation therapy—stroke—thromboembolic events—atrial fibrillation—rheumatic heart disease.

Introduction

Stroke is a global health problem and an emerging epidemic in India. Incidence registries using population-based surveillance have reported that the annual incidence of stroke varies from 100 to 150 per 100,000 population in urban locations with greater incidence in rural regions.[1] An estimated 20% of all ischemic strokes are a result of cardiogenic embolism, which can occur because of a variety of cardiac conditions, such as atrial fibrillation, rheumatic heart disease, valvular heart

From the *College of Nursing, All India Institute of Medical Sciences, New Delhi; †Department of Cardiology, All India Institute of Medical Sciences, New Delhi; and ‡Department of Neurology, All India Institute of Medical Sciences, New Delhi, India.
Received October 26, 2014; accepted November 12, 2014.

Address correspondence to Rohit Bhatia, MD, DM, DNB, Department of Neurology, All India Institute of Medical Sciences, New Delhi, India. E-mail: rohitbhatia71@yahoo.com.
1052-3057/$ - see front matter

http://dx.doi.org/10.1016/j.jstrokecerebrovasdis.2014.11.007

disease, etc.[2] For such patients, oral anticoagulation using adjusted dosages of oral vitamin K antagonists with a targeted international normalized ratio (INR) or newer anticoagulants is the recommended intervention for secondary prevention of ischemic stroke or transient ischemic attack. However, the therapeutic range of oral anticoagulants is narrow, and complications, such as life-threatening bleeding and rethrombosis, can occur if patients are over-anticoagulated or suboptimally anticoagulated, respectively.[3] Interactions with other drugs, dietary intake, poor adherence with medication, and deficiency in patient knowledge are factors associated with nontherapeutic treatment outcomes.[4] Evaluation of patient's knowledge is the first step to improve the quality of anticoagulation therapy and patient care. The present study was, therefore, conducted to assess the knowledge regarding oral anticoagulation therapy (OAT) among patients with stroke and those at high risk of thromboembolic events.

Methodology

A descriptive cross-sectional design was used. Adult patients (18 years or older) attending the Neurology and Cardiology outpatient and inpatient department with a diagnosis of mechanical heart valve replacement, rheumatic heart disease, atrial fibrillation, stroke, and on OAT were recruited in the study. Informed written consent was obtained from each participant. The study was approved by the Institutional Ethics Committee.

A structured self-developed questionnaire was used (Supplementary Material), which included details on demographic profile, clinical profile, and structured knowledge assessment questionnaire. The knowledge questionnaire consisted of 25 multiple choice questions regarding basic drug information (6 items), adverse effects (3 items), drug interactions (2 items), dietary interactions (4 items), and PT/INR monitoring (10 items). Each item had 1 correct response and was awarded 1 score. The maximum possible score was 25 and minimum was zero. The knowledge score was trichotomized into more than 70%, 50% to 70%, and less than 50% and was graded as good, average, and poor, respectively. The content validity of the tool was established, and reliability was tested by test-retest method with Cronbach alpha of .93. Data for the study were collected over a period of 6 months from July to December 2013. After the data collection, an informal education regarding OAT was given by the researcher to all the patients.

SPSS, version 17, was used to analyze the data. Descriptive statistics was used for describing the demographic and clinical variables. One-way analysis of variance with Bonferroni correction and independent sample *t* test was used to find the association between the knowledge score and various study variables.

Results

All 240 patients enrolled for the study completed the questionnaire. The mean age was 42.37 ± 14.76 years (range 18-78 years). Table 1 outlines the demographic details. One forty three (59.6%) patients were on therapy with acenocoumarol, 95 (39.6%) on warfarin, and 2 (.8%) patients were on dabigatran therapy. The indications of OAT included mechanical heart valve replacement in 102 (42.5%) patients, rheumatic heart disease in 58 (24.2%), atrial fibrillation in 52 (21.6%), and stroke in 28 (11.7%) patients. Only 89 (37.1%) patients were monitoring PT/INR monthly, whereas 88 (36.7%) patients were not monitoring PT/INR regularly. Most patients (62.9%) were ignorant about the target PT/INR level for maintenance, and only 72 (30%) patients had their most recent INR within the therapeutic range (Table 2).

Half of the patients were having poor knowledge score (<50%), 36.7% of them had average knowledge score (50%-70%), and 13.3% of patients had a good knowledge score (>70%) (Fig 1). The mean percentage knowledge scores on individual components of assessment showed the lowest score for dietary interactions (25%), followed by adverse effects (40%), drug interactions (40%), PT/INR monitoring (46%), and basic drug information (62%) (Fig 2).

Only 163 (67.9%) patients knew that the purpose of anticoagulant drugs is to prevent clotting of blood.

Table 1. *Demographic profile of the patients (N = 240)*

Demographic variables	Frequency (%)
Age (y)	
18-40	126 (52.5)
40-60	82 (34.2)
>60	32 (13.3)
Gender	
Male	135 (56.3)
Female	105 (43.8)
Education	
Illiterate	21 (8.8)
Primary school	35 (14.6)
Secondary school	110 (45.8)
Graduation and more	74 (30.8)
Monthly income (Rs)	
<5000	78 (32.5)
5001-15,000	84 (35)
15,001-30,000	50 (20.8)
>30,000	28 (11.7)
Marital status	
Unmarried	28 (11.7)
Married	201 (83.8)
Widow/widower/separated	11 (4.6)
Place of residence	
Rural	139 (57.9)
Urban	101 (42.1)