SHORT REPORT

Anticoagulation knowledge assessment in unprivileged people of Baluchistan

Khuzaima Tariq, Usman Ahmad, Maheen Sheikh

Abstract

The descriptive, cross-sectional study was planned to assess patients' knowledge on warfarin usage at a newly-developed health facility in Quetta, Pakistan. Warfarin knowledge and anticoagulant control was assessed using the pre-validated 29-item Anticoagulation Knowledge Assessment questionnaire which was dispensed during face-to-face interviews. Each question carried 3.45 points, and a minimum of 21 correct answers (21*3.45=72.4%) was the cut-off score. Data was analysed using SPSS 27. Of the 37 patients, 23(62.1%) were females, and 16(43%) were aged 31-40 years. Mechanical mitral valve replacement 9(24.3%) and mitral stenosis with atrial fibrillation 8(21.6%) were the main grounds for warfarin use. The awareness cut-off score was met by 4(10.8%) patients. The international normalised ratio, assessed using Jonckheere-Terpstra test, had no significant association with education level (p=0.380) or awareness score (p=0.102). The knowledge level among warfarin users was found to be poor. Effective policies are needed to identify hindrances and remove them to improve awareness levels.

Key Words: Warfarin therapy, Anticoagulation knowledge assessment tool, AKA, Patient education and safety.

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Introduction

For efficacy and effectiveness of any therapeutic regime, what matters the most is education and awareness of the patient population receiving it. In a region with extremely low resources for health education and medical infrastructure, and almost non-existing concepts of database and record registration, it is extremely difficult to keep track of patients on oral anticoagulation therapy and to assess their level of awareness.

Warfarin (coumadin) is an extremely effective medication for treatment and prevention of thromboembolic illnesses. Patients must be properly counselled on their anticoagulant medication because little changes in behaviour have the potential to make a serious difference. The effectiveness and safety of warfarin can be compromised by a number of circumstances. These include the patient's diet, alcohol consumption, other medications being taken along, illness, and, predominantly, compliance. Poor anticoagulation management and control may result from patients' lack of understanding about warfarin medication.[1,2]Currently, only two questionnaires measuring anticoagulation knowledge are valid and reliable; the Oral Anticoagulation Knowledge (OAK) test developed in 2006),[3] and the Anticoagulation Knowledge Assessment (AKA) questionnaire developed and validated in 2005.[4] The veracity and accuracy of both have been verified. A study in Karachi used the OAK test.[5]

The current study was planned as the first in Pakistan to use the AKA tool to evaluate the amplitude of understanding of anticoagulation among individuals receiving warfarin treatment, and to probe if there was a connection between patients' knowledge about warfarin and their competence to achieve the desired therapeutic range.

Methods and Results

The descriptive, cross-sectional study was conducted at Sheikh Mohammad Bin Zayed Al-Nahyan (SMBZAN) Institute of Cardiology, a newly developed cardiac care hospital in Quetta, Pakistan. Duration of study was 10 months and was conducted between 4-August-2022 to 30-May-2023. The sample was raised using non-probability consecutive sampling technique. Those included were patients aged >18 years who were taking warfarin for any diagnosed condition for more than 1 month. Since the institute was still in its early days, there wasn't enough data to determine a sample size. So, every case from a ten-month period was documented. After approval from the institutional ethics review board, and informed consent from the subjects, in-person interviews were conducted using the AKA questionnaire, and the responses were noted on a Google form. The pre-validated AKA questionnaire had 29 items. Each question carried 3.45 points, and a minimum of 21 correct answers (21*3.45=72.4%) was the cut-off score. AKA is a

Sheikh Muhammad Bin Zayed Al-Nahyan Institute of Cardiology, Quetta, Pakistan.

Correspondence: Khuzaima Tariq. **Email:** khutarek@gmail.com

ORCID ID: 0000-0001-6699-9636

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Table-1: Demographic characteristics

Demographics	Frequency (n=37)	Percentages %
Age Group		
less than 20	1	2.7
21-30	7	18.9
31-40	16	43.2
41-50	10	27
51-60	3	8.1
Gender		
Male	14	37.8
Female	23	62.1
Education		
Primary level	31	75.7
Secondary level	4	10.8
Graduate level	2	13.5
Socioeconomic		
Less than Rs75,000 per month	31	83.8
Rs75,000-200,000	4	10.8
More than Rs200,000	2	5.4
CVA/Cardiac Event		
Yes	11	29.7
No	26	70.3
Diabetes Mellitus		
Yes	4	10.8
No	33	89.2
Smoking		
Yes	5	13.5
No	32	86.5
Hypertension		
Yes	9	24.3
No	28	75.7
Family History of CAD		
Yes	18	48,6
No	19	51.4
Duration of warfarin therapy (Month)		
1-3 Months	14	37.8
4-6 Months	9	24.3
7-8 Months	8	21.6
9-12 Months	4	10.8
More than 12 Month	2	5.4
Diagnosis		
MVR	9	24.3
DVR	1	2.7
AVR	7	18.9
MR with AF	1	2.7
MS	1	2.7
MS with AF	8	21.6
Severe MS with AF	3	8.1
MVR+CABAG	3	8.1
Severe MS + moderate AR	1	2.7
MS+AS	1	2.7
Severe MS	1	2.7
MR+AR	1	2.7
Results of AKA Questionnaire		
Pass	4	10.8
Not Pass	33	89.2

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CVA: Cerebrovascular accident, CAD: Coronary artery disease, AF: Atrial fibrillation, DVR: Double valve replacement, MVR: Mitral valve replacement, AVR: Aortic valve replacement, MR: Mitral regurgitation, AR: Aortic regurgitation MS: Mitral stenosis, CABAG: Coronary artery bypass grafting, AS: Aortic stenosis.

comprehensive tool that includes dietary habits and their interactions, timing of drug intake, mode of action, adverse events, lifestyle and behavioural customisations, coping circumstances, like missed doses, underdoses and overdoses, and signs of bleeding complications.[6,7] The tool was translated into the local language and it was culturally adapted. Baseline characteristics, like age, gender, basic education and occupation, were noted. The range of international normalised ratio (INR) based on the last 5 readings, any previous clinical event pertaining to abnormal INR, and the duration of warfarin therapy was documented. Data was analysed using SPSS 27. Data was expressed in terms of mean ± standard deviation (SD) or frequencies and percentages, as appropriate. The relationship between patients' warfarin knowledge and anticoagulant control was assessed using the Jonckheere-Terpstra test. $P \leq 0.05$ was considered significant.

Of the 53 patients taking warfarin, 16(30.2%) were excluded as they were not willing to participate in the study. As such, the sample stood at 37(69.8%). Of them, 23(62.1%) were females, and 16(43%) were aged 31-40 years. Mechanical mitral valve replacement (MVR) 9(24.3%) and mitral stenosis (MS) with atrial fibrillation (AF) 8(21.6%) were the main grounds for warfarin use, with the duration ranging from 1 month to 36 months. The awareness cut-off score was met by only 4(10.8%) patients (Table 1). The INR had no significant association with education level (p=0.380) or awareness score (p=0.102) (Table 2).

Discussion

The present study found that only 4(10.8%) of the 37 patients were able to clear the cut-off AKA score. The question that elicited 100% wrong answers was regarding spinach consumption while on warfarin, and all the subjects thought spinach should not be taken. The correct answer was that it can be taken in the same amount every week on a regular basis. The question that had the maximum right answers was about what does prothrombin time (PT)/INR tells. There were 33(97.3%) correct answers as they had at least an idea which test to go for and what did it tell. The patients generally thought morning was the best time for taking any drug, including

Table-2: Association of Anticoagulation Knowledge Assessment (AKA) questionnaire score with average international normalised ratio (INR) and level of education of the respondents

Scoring	Mean Scoring	Average Inr	Mean Inr	P- Value*	Education	P-Value*
		1.2				
		1.4				
6		1.7				
10		1.8				
12		1.9				
13		2				
14		2.1			Primary level	
15	16 SD† = 1.43	2.2	2.06 SD† = 1.08		Secondary level	
16		2.3		0.380.	Graduate level	0.102
17		2.4				
18		2.6				
19		2.7				
20		2.8				
21		3.2				
24		3.3				
25		3.8				
26		3.9				
		4.1				
		4.1				
		4.3				
		4.7				

*Jonckheere-Terpstra test (P <0.05 taken as significant), †Standard Deviation

warfarin. The patients were educated about evening time being the best for warfarin, specifically to avoid drug interactions maximally.

The most commonly observed barriers for lack of awareness and compliance were low level of education, and the lack of warfarin availability, especially in the far-flung areas of Balochistan. The current interview-based study not only helped in assessing the knowledge of the community, but also provided an opportunity of educating and improving the knowledge of the people. Based on the findings, a proper warfarin/INR clinic with a pharmacist and a nurse was proposed to the administration to further serve the basic need of patients in remote areas of Balochistan.

Nasser S. et al.[8] has put forward helpful strategies for improving elderly patients' knowledge about warfarin. They reviewed 62 studies and found that improved patient knowledge resulted in better anticoagulation control. After going through various studies[9,10] and reviews, the current study was able to design policies that were best suited to the local context for approach the issue. It included developing an INR clinic registering patient to provide round-the-clock services in person as well as through an online WhatsApp group. It also comprised individual face-to-face patient education sessions in clinics, telephonic counselling for those who in far flung areas, handing out written information on warfarin knowledge, audiovisual resources for warfarin education, providing free of cost warfarin tablets to address availability and affordability issues, and animated videos on warfarin, its adverse effects and precautions and interactions with dietary items and other drugs, as well as adverse events if the dose was not taken strictly as per the prescription.

Limitations: The institute was still in its early phase, which resulted in a lower patient turn over, compared to more established, old institutions in other cities, consequently, rendering it difficult to predetermine a sample size. A small sample size is a significant limitation of the study, which may have impacted the generalizability of our findings, which can be corrected in future with large sample size.

Conclusion

The findings underlined the shortcomings of the health educational system at the level of both the patients and the doctors, which is the responsibility of everyone involved in the provision of healthcare. There was found a poor knowledge of warfarin among the users, which threatened poorer therapeutic outcomes. The suggested educational policies were aimed at identifying and addressing patient education and awareness issues.

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KT: Idea, writing, preparation, study design and revision.
UA: Literature review, proofreading, data analysis and formatting.
MS: Data collection, analysis and provided critical feedback.