

Knowledge of warfarin therapy among patients attending Warfarin Clinic at a Public Hospital in Northern part of Malaysian Peninsular

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ABSTRACT

Background: Patient's knowledge of anticoagulation therapy is important to achieving and maintaining optimal therapy outcome as well as reducing adverse events. The aim of this study was to assess knowledge of warfarin therapy among patients attending Warfarin Clinic at a public hospital.

Materials and Method: A cross-sectional survey of 128 patients was conducted at a Warfarin Clinic. Face to face interviews were conducted, using standard questionnaires to determine demographic characteristics and knowledge of warfarin therapy.

Results: The mean age of participants was 50.5 years. Majority of patients were male (56.2%), Malays (46.89%) and married (78.1%). A large proportion of patients had only primary (33.6%) and secondary school education (43.0%). The result indicates almost all patients know the indication (95.8%) and dosage (92.2%) of warfarin. In addition, 89.1% of patients know what to do in case of a missed dose. However, more than half of participants do not know the consequence of missing a dose. Most patients know the purpose of INR monitoring and the consequence of INR value above or below the therapeutic range. There were only 42.2% of the patients who know the frequency of INR monitoring. Knowledge of drug interaction indicates more than 50% of patients possess knowledge of warfarin-alcohol, warfarin-vitamin, warfarin-OTC and warfarin-food interaction. There were 64.1% of patients who know when to seek immediate medical attention and 56.3% who are aware of side effect monitoring. Categorization of knowledge level shows 41.4% of patients have good level of knowledge about anticoagulation therapy. However, only 33.6% of patients have excellent knowledge while 1.6% of patients were found to have poor knowledge of warfarin therapy.

Conclusion: It can be concluded majority of patients attending warfarin clinic have insufficient knowledge about warfarin therapy.

Key words: Anticoagulation therapy, international normalized ratio, knowledge, warfarin

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INTRODUCTION

Warfarin therapy is increasingly used for the prevention and treatment of various thrombotic diseases.^[1,2] Warfarin has been the mainstay oral anticoagulant for the several decades despite its narrow therapeutic index and difficulties to use.^[3] The safety and effectiveness of warfarin depend critically on maintaining international normalized ratio (INR) within therapeutic range.^[4] Suboptimal anticoagulation control is a significant problem because it may lead to hemorrhagic and thromboembolic events.^[5]

Poor patient knowledge about warfarin therapy has been found to be associated with worse anticoagulation control^[1,6,7] and increased frequency of hemorrhagic events.^[7,8] Achieving optimal outcomes with oral anticoagulants requires regular monitoring of the prothrombin time, expressed as the INR, and related dosage changes are necessary.^[6] In addition, good knowledge and understanding improve compliance to warfarin therapy.^[1,2] The aim of this study was to assess knowledge of warfarin therapy among patients attending Warfarin Clinic.

METHODOLOGY

Study design and location

This cross-sectional study was conducted over 4 months at Warfarin Clinic, Penang Hospital. The clinic was established in 2008 to review and manage patients on warfarin from cardiothoracic and cardiology clinic, and in 2009, the scope was expanded to outpatient department.

Sample size determination

The required sample size was calculated to be 122 using a significance level of 0.05 and 80% power.^[9]

Inclusion criteria

All adult patients who had attended Warfarin Clinic at least 8 times were included. A minimum of eight visits was chosen to ensure patients have enough exposure to the clinic.

Exclusion criteria

Patients below 18 years who have mental illness or dementia or cannot communicate in Malay, Chinese, or English language were excluded.

Data collection

A standardized form was used to obtain patient demographic information such as age, gender, race,

educational level, marital status, and indication for warfarin therapy.

A validated questionnaire was adapted and used to assess participant's knowledge of warfarin therapy. This questionnaire was developed by Zeolla *et al.* and had been tested for validity and reliability.^[10] The questionnaire consists of five domains that are basic drug information, side effects, drug interaction, INR monitoring, and missed dose. An assessment tool consisting of four responses for every question was chosen which has one correct answer and three distractors. The questionnaire was used after approval was given by the author.

The adapted questionnaire was translated into Malay and Chinese languages using the forward-backward translation method to ensure conceptual equivalence. The translated questionnaire was validated by a panel of two physicians and two senior pharmacists at the study hospital.

A face to face interview was conducted at the clinic using the validated questionnaire to assess patient's knowledge of warfarin therapy.

Data analysis

Data entry and statistical analysis were performed using Statistical Package for Social Science version 17. Results were presented in frequencies and percentages. For the purpose of analysis, each correct answer was assigned a point, and the total point obtained was transformed into percentage to indicate the patients' overall knowledge on warfarin therapy. Knowledge score were categorized as follows: Patients who provide 0-5, 6-10, 11-15, and 16-20 correct answers were categorized as having poor, fair, good, and excellent knowledge respectively.

Ethical consideration

The study was approved by Medical Research Ethics Committee, Malaysia. The registration number of the study is Nmrr-09-642-4405.

RESULTS

A total of 128 patients participated in the study. The mean age (standard deviation) of the participants was 50.53 (14.32) years old to The mean age of the participants was 50.5 years. Majority of patients were male 56.2%. Patients' characteristics are presented in Table 1.

Table 1: Patients' demographic characteristics

Patient's characteristics	Number of patients	Percentage
Age (in years)		
20-45	51	39.8
46-65	59	46.1
>65	18	14.1
Gender		
Male	72	56.2
Female	56	43.8
Race		
Malay	60	46.9
Chinese	55	43.0
Indian	13	10.1
Education level		
No education	10	7.8
Primary	43	33.6
Secondary	56	43.8
University or college	19	14.8
Marital status		
Single	23	18.0
Married	100	78.1
Divorced or separated	2	1.6
Widow	3	2.3
Indication		
Atrial fibrillation	22	17.2
Mitral valve replacement	53	41.4
Aortic valve replacement	32	25.0
Other	21	16.4

The result indicates 95.8% and 92.2% know the indication and dosage of warfarin, respectively. However, over 50% do not know the consequence of missing a dose. In addition, only 42.2% of the patients know the frequency of INR monitoring. Furthermore, more than 50% of participants possess knowledge of warfarin interactions. There were 64.1% who know when to seek immediate medical attention [Table 2].

Most participants (41.4%) possess a good knowledge of anticoagulation therapy. However, only 33.6% of patients have excellent knowledge while 1.6% of patients were found to have poor knowledge of warfarin therapy [Table 3].

DISCUSSION

Generally, knowledge of warfarin therapy among patients in this study was not satisfying. Only 33.6% of patients had excellent knowledge about warfarin therapy. This is consistent with findings from the previous studies where majority of patients had poor knowledge.^[1-3,11]

Low level of patients' knowledge may be attributed to inability to understand and retain the information

Table 2: Patients' knowledge on warfarin therapy according to domain

Knowledge domain	Number of patients who answer correctly (%)
Basic drug information	
Warfarin indication	122 (95.8)
Dosage	118 (92.2)
Missed dose	
What to do in case of missed dose	114 (89.1)
Effect of missing one dose on PT/INR	70 (54.7)
Consequence of missing dose	58 (45.3)
INR monitoring	
Purpose of PT/INR test	110 (85.9)
What to do when having INR checking	94 (73.4)
Risk associated with INR beyond therapeutic range	85 (66.4)
Risk associated with INR below therapeutic range	82 (64.1)
Frequency of monitoring	54 (42.2)
Drug interaction	
Alcohol use	102 (79.7)
Vitamin-warfarin interaction	97 (75.8)
Actions to be taken if there is a change in prescription medication	95 (74.2)
Over the counter-warfarin interactions	93 (72.7)
Consistency on diet consideration	73 (57.0)
Food-warfarin interactions	66 (51.6)
What to do when taking drug known to interact with warfarin	65 (50.8)
Drug-warfarin interactions	55 (43.0)
Adverse reaction	
When to seek immediate medical attention	82 (64.1)
Side effects monitoring	72 (56.3)

INR=International normalized ratio, PT=Prothrombin time

provided during counseling.^[12] This shows that pharmacists who provide patient education need to reinforce the information by using verbal repetition, picture, or written materials. Another possible reason for low patient knowledge might be inability to recall information during interview session. Some patients leave their treatment in the hands of caregivers and thus do not pay attention to the information provided by the pharmacists.^[13]

Result shows less than 50% of participants know the consequence of missing dose, drug-warfarin interactions, and frequency of monitoring INR. These findings are consistent with other studies where participants had limited knowledge in similar areas of warfarin therapy.^[1,3] Emphasis should be placed on these areas during counseling sessions. To avoid unintentional skipping of these important items, there is a need to highlight them on the counseling checklist.

Table 3: Patients' knowledge level of warfarin therapy

Knowledge level	Total of correct answer	Number of patients (%)
Poor	0-5	2 (1.6)
Fair	6-10	30 (23.4)
Good	11-15	53 (41.4)
Excellent	16-20	43 (33.6)

Patient education about the risk and benefits of anticoagulation is important. It is crucial to ensure that patients understand interactions and the importance of compliance and regular monitoring.^[14] It is the pharmacist responsibility to ensure all patients receive relevant information regarding warfarin therapy. Pharmacists also need to assess patient's knowledge, identify areas of deficit, and educate the patient during each follow-up to improve patients' knowledge of therapy.

CONCLUSION

Most patients attending Warfarin Clinic have insufficient knowledge about their therapy. In addition, this study has highlighted areas where improvement is needed. More investment in patient education is needed.

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Conflicts of interest

There are no conflicts of interest.

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