

Assessment of Knowledge Levels Regarding Warfarin Among Home Health Care Patients with Long-term Warfarin Use

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Accepted 02 June 2026.

Abstract

Objective and Aim

Approximately 80% of patients followed by home health care services receive anticoagulant therapy. These anticoagulants include acetylsalicylate, heparin, warfarin, and direct oral anticoagulants (DOACs). However, a significant portion of patients still utilize warfarin. Due to its narrow therapeutic index, warfarin can lead to severe morbidity and mortality. For home health care patients who face challenges accessing hospital facilities, it is vital to have home-based blood sampling and maintain the INR within the target range. Unfortunately, patients on long-term warfarin therapy and their caregivers often lack the desired level of awareness regarding the medication. This deficiency can lead to serious, preventable side effects. Determining the correct and incorrect

knowledge of patients and caregivers is the primary step toward correcting misconceptions. This study aims to evaluate the knowledge status regarding warfarin, exposure to side effects, and associated factors among patients or their relatives followed by home health care services.

Materials and Methods

The study was conducted by screening the archives of the University of Health Sciences (UHS) Adana City Hospital Home Health Care Services between February 1, 2025, and February 1, 2026. This is a retrospective study. Approval was obtained from the UHS Adana City Training and Research Hospital Scientific Research Ethics Committee. Inclusion criteria were being aged 18 or older, being registered with home health care services during the specified dates, and having used warfarin for at least 3 months. The investigated data evaluated sociodemographic status, warfarin utilization patterns, and the knowledge levels of patients and/or their relatives regarding warfarin.

Results

Of the participants, 68.9% (n=31) were female and 31.1% (n=14) were male. The mean age of the participants was 75.4 years. All participants had comorbid diseases. The average daily medication use, excluding warfarin, was 5.17. The most common

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To cite:

Durgay MA, Aşık Z. Assessment of Knowledge Levels Regarding Warfarin Among Home Health Care Patients with Long-term Warfarin Use. VMS Journal 2026;2(2):73-76.
doi: 10.64514/vmsjournal.2026.23

comorbidities were hypertension, diabetes mellitus, coronary artery disease, and Alzheimer's disease. Warfarin indications were as follows: 48.9% (n=22) heart valve replacement, 8.9% (n=4) deep vein thrombosis, 8.9% (n=4) atrial fibrillation, 8.9% (n=4) pulmonary embolism, and 24.4% (n=11) cerebrovascular disease. Warfarin-related adverse effects occurred in 37.8% (n=17) of the participants. These side effects included intraocular hemorrhage, gastrointestinal bleeding, gingival bleeding, epistaxis, and hematuria. Additionally, 64.4% (n=29) of participants reported no knowledge of warfarin-drug interactions, and 75.6% (n=34) stated they did not follow any specific diet related to warfarin use. While 24.4% (n=11) of patients administered the medication themselves at home, for others, it was administered by a daughter, son, spouse, or caregiver. A history of warfarin side effects, dietary compliance, and knowledge of drug interactions were compared based on the last measured INR value; the p-values were 0.109, 0.805, and 0.030, respectively. No significant correlation was found between participants' age and the number of non-warfarin medications, duration of warfarin use, or duration of registration in home health care services (p-values: 0.313, 0.314, and 0.228, respectively).

Conclusion

Patients receiving home health care services and their caregivers are not sufficiently informed about the effects, side effects, and precautions associated with warfarin. To minimize adverse effects in these patients, it is crucial to provide regular follow-up and comprehensive education regarding warfarin's effects and necessary precautions.

Keywords: Warfarin, Home Health Care Services, Knowledge Level.

1. Introduction

Approximately 80% of patients monitored by home health care services are receiving

anticoagulant therapy. The anticoagulants used may include acetylsalicylic acid, heparin, warfarin, and newer-generation anticoagulant agents. Due to warfarin's narrow therapeutic range, close monitoring is required during its use (1). For these patients, it is important to have blood drawn at home and to maintain the INR within the target range. Inadequate monitoring during warfarin therapy can lead to serious morbidity and mortality (2).

Caregivers of home-care patients must also have sufficient knowledge about warfarin. To prevent potential side effects, patients or their caregivers must be provided with information about warfarin.

The aim of this study is to assess the level of knowledge about warfarin among patients or their relatives who are under home health care and taking warfarin, as well as patients' exposure to side effects and the factors associated with them.

2. Materials and Method

The study was conducted by screening the archives of the University of Health Sciences (UHS) Adana City Hospital Home Health Care Services between February 1, 2025, and February 1, 2026. This is a retrospective study. Approval was obtained from the UHS Adana City Training and Research Hospital Scientific Research Ethics Committee. Inclusion criteria were being aged 18 or older, being registered with home health care services during the specified dates, and having used warfarin for at least 3 months. The investigated data evaluated sociodemographic status, warfarin utilization patterns, and the knowledge levels of patients and/or their relatives regarding warfarin.

3. Results

Of the participants, 68.9% (n=31) were female and 31.1% (n=14) were male. The mean age of the participants was 75.4 years. All participants had comorbid diseases. The average daily medication use, excluding warfarin, was 5.17. The most common comorbidities were hypertension, diabetes

mellitus, coronary artery disease, and Alzheimer's disease. Warfarin indications were as follows: 48.9% (n=22) heart valve replacement, 8.9% (n=4) deep vein thrombosis, 8.9% (n=4) atrial fibrillation, 8.9% (n=4) pulmonary embolism, and 24.4% (n=11) cerebrovascular disease. Warfarin-related adverse effects occurred in 37.8% (n=17) of the participants. These side effects included intraocular hemorrhage, gastrointestinal bleeding, gingival bleeding, epistaxis, and hematuria. The duration of follow-up with the home health care unit ranged from a minimum of 3 months to a maximum of 10 years among the participants. The duration of warfarin use ranged from a minimum of 3 months to a maximum of 28 years.

Additionally, 64.4% (n=29) of participants reported no knowledge of warfarin-drug interactions, and 75.6% (n=34) stated they did not follow any specific diet related to warfarin use. While 24.4% (n=11) of patients administered the medication themselves at home, for others, it was administered by a daughter, son, spouse, or caregiver. The average dose of warfarin prescribed to participants was 24 mg. The average INR value measured in participants was 2.45. The most recent prescribed warfarin dose and the most recent measured INR value were compared ($p=0.656$). A history of warfarin side effects, dietary compliance, and knowledge of drug interactions were compared based on the last measured INR value; the p -values were 0.109, 0.805, and 0.030, respectively. No significant correlation was found between participants' age and the number of non-warfarin medications, duration of warfarin use, or duration of registration in home health care services (p -values: 0.313, 0.314, and 0.228, respectively).

Discussion

The average age of our study participants was 75.4, and 68.9% of the participants were women. In a study conducted in China examining patients receiving warfarin therapy, the average age was 66.9, and 50.6% of the participants were male. The

higher proportion of female participants in our study may be attributed to women having a longer life expectancy than men and the higher average age of the participants in our study. Our study demonstrates that patients receiving home health care and using warfarin are generally of advanced age, often have multiple comorbidities, and are on polypharmacy. The literature indicates that in older adults using anticoagulants, hypertension, diabetes mellitus, and coronary artery disease frequently coexist, and this situation complicates treatment management (3). It has also been shown that the increased burden of comorbidities in older adults raises the risk of complications associated with warfarin (4). Indeed, in our study, 37.8% of participants developed warfarin-related side effects. In a retrospective study examining patients who experienced bleeding episodes during warfarin therapy, bleeding occurred in 39.2% of patients using warfarin; the study emphasized that this risk is higher in older individuals, a finding consistent with the bleeding complications observed in our study (5).

In our study, the average daily use of medications other than warfarin was 5.17. Studies have shown that polypharmacy complicates INR control during warfarin therapy and increases the risk of bleeding (6). The fact that 64.4% of participants were unaware of warfarin drug interactions indicates that this risk is clinically even more significant. A study has demonstrated an association between low patient knowledge and the inability to maintain a therapeutic INR range, as well as the development of complications (7).

In our study, when examining the indications for warfarin use, heart valve replacement was the most common (48.9%). Despite the increasing use of newer-generation oral anticoagulants, warfarin remains the first-line treatment for patients with mechanical valves (3).

The fact that the vast majority of participants (75.6%) did not follow a warfarin-specific diet is a significant issue in terms of patient education. It is known that dietary changes

can directly affect INR levels and increase the risk of bleeding. However, the lack of a significant association between diet and INR in our study may be related to low patient awareness regarding diet or inconsistent adherence to dietary guidelines.

However, the finding of a significant association between knowledge of warfarin drug interactions and INR levels ($p=0.030$) underscores the importance of patient education. It has been demonstrated that maintaining an INR within the target range is associated with patient education, regular follow-up, and treatment approaches. It is believed that this lack of education may be particularly pronounced among individuals receiving home health care.

Our study found that a significant proportion of patients take their medication not on their own but through their caregivers. It has been demonstrated that caregivers play a critical role in medication management for older adults and that their level of knowledge directly influences treatment success (4). This situation highlights the need to educate caregivers as well as patients.

Finally, the absence of a significant association between age and the number of medications, the duration of warfarin use, and the duration of home health care can be attributed to the fact that the sample consisted primarily of older adults. Similarly, it has been shown that such associations may be weak in groups where the elderly population is homogeneous (3).

Conclusion

Overall, this study, in line with the current literature, demonstrates that polypharmacy, lack of knowledge, and inadequate education are significant issues among patients receiving home health care who are taking warfarin. In particular, raising awareness of drug interactions and developing patient and caregiver education programs are of critical importance for ensuring INR control and reducing complications.

Conflict of interest

The authors declare no conflict of interest.

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