



## **The Use of Anticoagulants and Antiplatelet Agents among Outpatients in Alkharj**

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### **Author's contribution**

*The sole author designed, analysed, interpreted and prepared the manuscript.*

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### **ABSTRACT**

**Background:** Thromboembolic diseases are a leading cause of mortality and morbidity worldwide. Anticoagulants and antiplatelet medications are important therapies in the prevention and treatment of cerebrovascular and cardiovascular diseases. There is a limited data about the prescribing of these medications.

**Aim:** This study aims to describe the pattern of anticoagulants and antiplatelet agents use among outpatients in Alkharj.

**Methodology:** This is a retrospective study that includes the electronic prescriptions among outpatients in a public hospital in Alkharj

**Results:** Aspirin was the most commonly prescribed agent (61.73%) followed by clopidogrel (18.60%) and enoxaparin (69%). Aspirin and clopidogrel was the most commonly prescribed combination (77.27%). Antiplatelet agents and anticoagulants result in improve several benefits but also could result in severe adverse effects and several drug interactions.

**Conclusion:** The prescribers should ensure that benefit of Antiplatelet and anticoagulant outweigh the bleeding risk before prescribing these medications. It is important also to implement educational interventions to improve their use.

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## 1. INTRODUCTION

Thromboembolic diseases are a leading cause of mortality and morbidity in the United States [1]. Stroke and ischemic heart disease are the two main causes of death globally, in 2008 both diseases were responsible for 24% of all deaths reported [2]. Anticoagulants and antiplatelet drugs are important standard therapies to prevent clot formation in the prevention and treatment of cerebrovascular and cardiovascular diseases [3].

International guidelines strongly recommend the use of antiplatelet therapies such as aspirin for adults with or at risk of cardiovascular disease [3,4]. The risks of bleeding do not outweigh the benefits of using antiplatelet Agents for preventing or treating cardiovascular diseases [5,6]. But there are several risk factors for bleedings including female gender, multiple comorbidities, advanced age and concomitant use of antiplatelet and anticoagulant drugs [7,8].

Venous thrombi consist mainly of fibrin with some cells trapped in between. The use of anticoagulants is the recommended therapy to treat or prevent these conditions. previously, heparin and warfarin were the mainstay of treatment, but nowadays a new anticoagulant drugs are developing and continuously expanding the pharmaceutical armamentarium [9]. Moreover, these new direct oral anticoagulants such as rivaroxaban and dabigatran are also appropriate due to a lack of mandatory monitoring and have fewer problematic food and drug interactions than warfarin [10].

Antiplatelet agents and anticoagulants have been used for decades to prevent and treat

cardiovascular diseases, but there are only limited data published on antiplatelets/anticoagulants prescription in Saudi Arabia. Therefore, this study aims to describe the pattern of anticoagulants and antiplatelet agents use among outpatients in Alkharj.

## 2. METHODOLOGY

This is a retrospective study that includes the electronic prescriptions among outpatients in a public hospital in Alkharj. The Inclusion criteria include outpatient prescriptions that contain an antiplatelet agent or anticoagulant in the period between 01-07-2018 till 31-12-2018. Exclusion criteria include inpatient prescriptions and outpatient prescriptions that don't contain an antiplatelet agent or anticoagulant.

The collected data include the prescribed medications, the demographic data of patients, the level of prescribers, departments that prescribed these medications, the prescribed dosage forms and the prescriptions that include a combination between 2 antiplatelet agents or a combination between anticoagulant and antiplatelet drugs.

The data were collected and analyzed by Excel software and the descriptive data were represented as a frequencies and percentages. This study was approved by the Institutional Review Board log number 2019-0153E

## 3. RESULTS AND DISCUSSION

The outpatient setting dispensed 473 anticoagulant and antiplatelet drugs for 421 patients during the study period of 6 months, about 55 % were female patients. Table 1 shows the demographic data of patients

**Table 1. The demographic data of patients**

Variable	Category	Number	Percentage
Gender	Male	189	44.89%
	Female	232	55.11%
Nationality	Saudi	302	71.73%
	Non-Saudi	119	28.27%
Age	Less than 20	2	0.47%
	20-29	22	5.23%
	30-39	56	13.30%
	40-49	86	20.43%
	50-59	99	23.52%
	60-69	77	18.29%
	70 or more	79	18.76%

Most of the prescription were written by internal medicine (29.17%) and cardiology (27.27%) departments and prescribed mainly by residents (69.13%). Table 2 shows the prescribing pattern of antiplatelet agents and anticoagulant

About 85.41% of the prescriptions was prescribed as a tablet or coated tablet and this is rational because the outpatients usually don't use injections and only 14.59% as a prefilled syringe of enoxaparin to be given subcutaneously. Heparin didn't dispense in outpatient settings because it is given as an intravenous injection.

Aspirin was the most commonly prescribed agent (61.73%) followed by clopidogrel (18.60%) and enoxaparin (69%). The dispensed medications in the outpatient setting are shown in Table 3.

Rahman et al reported that antiplatelet agents are the most commonly prescribed or used compared to other cardiovascular drugs [11]. Additionally, Solanki et al reported that among the outdoor cardiovascular disease patients used Anti platelets were the most common prescribed drugs (34%) [12].

In contrast to our study results, Muhit et al reported that among the cardiac disorder patients, clopidogrel + aspirin (48.36 %) was the most common prescribed antiplatelet agent followed by clopidogrel alone (37.21%) and aspirin alone (10.12%) [13]. Moreover, Nishanthini et al reported that among type 2 diabetes mellitus patients who have ischemic heart disease, Clopidogrel alone (22%) prescribed more than clopidogrel and aspirin combination (14%) followed by aspirin alone (12%) [14].

Geraldes et al stated that among patients with atrial fibrillation direct-acting oral anticoagulants were rapidly incorporated into clinical practice, replacing anti-vitamin k anticoagulants and antiplatelets, and contributing to greater use of anticoagulation in patients with atrial fibrillation, he reported that 75% of the patients were discharged on anticoagulants (mainly direct-acting oral anticoagulants) and only 15% were on antiplatelets alone [15]. Similarly, regarding anticoagulant prescribing in the present study, the patients were discharged with direct-acting oral anticoagulants (2.54%) more than warfarin (1.69%)

**Table 2. The prescribing pattern of antiplatelet agents and anticoagulant**

Variable	Category	Number	Percentage
Dosage forms	Tablets	393	83.09%
	Coated tablet	11	2.32%
	Prefilled syringe	69	14.59%
Level of prescribers	Specialist	44	9.3%
	Resident	327	69.13%
	Consultant	102	21.56%
Prescribing Departments	Internal Medicine	138	29.17%
	Cardiology	129	27.27%
	Emergency	64	13.53%
	Obstetrics & Gynecology	63	13.32%
	Nephrology	41	8.67%
	Neurology	21	4.44%
	Orthopedic	11	2.33%
	Others	6	1.27%

**Table 3. The dispensed medications in the outpatient setting**

Medication	Number	Percentage
Aspirin	292	61.73%
Clopidogrel	88	18.60%
Enoxaparin	69	14.59%
Rivaroxaban	11	2.33%
Warfarin	8	1.69%
Ticagrelor	4	0.85%
Dabigatran	1	0.21%

**Table 4. the most commonly prescribed combinations**

Medication	Number	Percentage
Aspirin and Clopidogrel	17	77.27%
Aspirin and Warfarin	3	13.64%
Clopidogrel and Ticagrelor	1	4.54%
Clopidogrel and Enoxaparin	1	4.54%

Out of 22 prescriptions that include a combination between 2 antiplatelet agents or an antiplatelet agent with anticoagulants, aspirin are the most combined drug (90.91%) and aspirin and clopidogrel was the most common combination (77.27%). Table 4 shows the most commonly prescribed combinations

Aspirin and clopidogrel was the most common combination. Similar results were reported by Muhit et al, Nishanthini et al and Ahmed et al studies [13,14,16]. Eikelboom and Hirsh stated that the antiplatelet combination with another antiplatelet or with anticoagulant depend mainly on the indication so antiplatelet therapy is often combined with oral anticoagulants in patients with an indication for warfarin therapy such as in patients with atrial fibrillation who also have an indication for antiplatelet therapy such as coronary artery disease [17].

The selection of specific antiplatelet or anticoagulant drug depend in addition to indication on patient characteristics and history. Luger et al stated that among atrial fibrillation, the decision on the use of specific anticoagulant was mainly determined by the patient's renal function and absence of previous anticoagulant therapy [18].

#### 4. CONCLUSION

It can be concluded that the cardiovascular patients use antiplatelet agents (specially aspirin and clopidogrel) and anticoagulants commonly and that the physicians start prescribing direct-acting oral anticoagulants more than warfarin. Antiplatelet agents and anticoagulants result in improve several benefits but also could result in severe adverse effects and several drug interactions. The prescribers should ensure that the appropriate Antiplatelet and anticoagulant agents are prescribed. It is important also to implement educational interventions to improve their use.

#### DISCLAIMER

The products used for this research are commonly and predominantly use products in our

area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

#### CONSENT

It is not applicable.

#### ETHICAL APPROVAL

It is not applicable.

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#### COMPETING INTERESTS

Author has declared that no competing interests exist.

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