



Prescribing Patterns of Isosorbide Dinitrate in Outpatient Department of a Public Hospital

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Authors' contributions

This work was carried out in collaboration between both authors. Author NJA designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Author NJA managed the analyses of the study. Author MAM managed the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

Objective: The aim of this study was to describe the prescribing pattern of isosorbide dinitrate in outpatient department.

Methods: The study was carried out at outpatient department in Alkharj. The collected data included personal data, dosage forms of the prescribed isosorbide dinitrate, the prescribing departments and the level of the prescribers.

Results: Isosorbide dinitrate was prescribed to 57 patients in the outpatient department; about 61.4% of them aged more than 59. About 80.7% of patients received isosorbide dinitrate tablets and 19.3% of them received sublingual tablets. Most of the prescriptions were prescribed by cardiology department (56.14%) followed by Internal Medicine department (26.32%).

Conclusion: Isosorbide dinitrate prescribing was uncommon in the outpatient setting but it can cause several side effects and drug interactions, besides some patients are allergic to it. So the doctor should judge that the benefit to the patient is greater than the risk of side effects.

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1. INTRODUCTION

Cardiovascular disease is a general term for conditions that affect the blood vessels or the heart [1]. These conditions are common and cause several negative outcomes. In the United States, one patient dies from cardiovascular disease every 36 seconds [2] and nearly 655,000 Americans die each year from heart disease; that is 1 in every 4 deaths [3]. Coronary heart disease is the most common type of heart disease [4]. It develops when the major blood vessels that supply your heart become damaged or diseased [5]. Angina is the main Symptom of Coronary heart disease [5].

Antianginal agents are a wide variety of medications that are used in the management of angina and included nitrates, calcium antagonists, beta blockers and ranolazine [6]. Nitrates are active vasodilators on both veins and arteries [7]. Nitrates include numerous drugs such as isosorbide dinitrate, nitroglycerin and isosorbide mononitrate [6].

Isosorbide dinitrate is used to prevent angina in patients with a coronary artery disease. It works by widening and relaxing blood vessels and as a result eases the blood flow to the heart [8]. Isosorbide dinitrate is one of the commonly prescribed drugs in patients with chest pain and provide an intermediate action [9]. The principal pharmacological action of Isosorbide Dinitrate is relaxation of vascular smooth muscle and consequent dilatation of peripheral arteries and veins, especially the latter [7].

Nitrates were commonly prescribed inappropriately especially for elderly patients [10,11]; a previous study stated that elderly patients seem to be treated with antianginal medications without any diagnostic evaluation [10]. Other study reported that organic nitrates 10.3% of the inappropriate prescribed medications in hospitalized older adults [11]. It is important to know the prescribing pattern of isosorbide dinitrate to ensure that its use is appropriate. Therefore, the aim of this study was to describe the prescribing pattern of isosorbide dinitrate in outpatient department.

2. METHODS

The study was carried out at outpatient department in Alkharj.

All patients who received Isosorbide Dinitrate in the outpatient department between July and December 2018 were included in the study. The patients who didn't receive it and the patients in other settings were excluded from the study.

The data required for the present study was collected from electronic outpatients' records and included personal data, dosage forms of the prescribed Isosorbide Dinitrate, the prescribing departments and the level of the prescribers.

The data were collected and analyzed using Microsoft Excel 2010 and represented as a frequencies and percentages.

3. RESULTS AND DISCUSSION

Isosorbide Dinitrate was prescribed to only 57 patients in the outpatient department. More than 52% of them were females and about 61.4% of them aged more than 59. Patients' personal data are shown in Table 1.

About 80.7% of patients received Isosorbide Dinitrate tablets and 19.3% of them received sublingual tablets. Dosage forms of the prescribed Isosorbide Dinitrate are shown in Table 2.

Most of the prescriptions were prescribed by residents (75.44%) followed by consultants (15.79%). The level of the prescribers is shown in Fig. 1.

Most of the prescriptions were prescribed by cardiology department (56.14%) followed by Internal Medicine department (26.32%). The prescribing departments are shown in Table 3.

Isosorbide Dinitrate prescribing was uncommon in the outpatient setting. In contrast to the result of the present study, Mugada [12] reported that the most commonly prescribed cardiovascular medications in outpatient department in a tertiary care hospital are clopidogrel, atorvastatin, Isosorbide Dinitrate and aspirin. Moreover, they also stated that Isosorbide Dinitrate was the commonly prescribed organic nitrate (50.6%) [12]. Other study conducted by Zubair Khalid Labu et al. [13] showed that nitroglycerine was most commonly prescribed organic nitrate.

Roy et al. [14] reported that only nitroglycerin and Isosorbide mononitrate were prescribed in the

outpatient setting in a hospital in Bangladesh. Additionally, Veeramani and Muraleedharan found that sublingual tablets Isosorbide Dinitrate and nitroglycerin are vastly prescribed for emergency purposes and that nitrates were prescribed for 25.34% of patients with different CVDs [15]. Other study was conducted in a tertiary care teaching hospital of North India and showed that for patients with myocardial infarction, Isosorbide Dinitrate (73.5%) and glyceryl trinitrate (17.5%) were the most commonly prescribed antianginal drugs [16].

Shah et al. [17] stated that among older cardiac patients, 38.1% of them received Isosorbide Dinitrate. They also stated that 83.1% of the patients have angina pectoris and this could be the reason that they were on drugs such as Isosorbide Dinitrate. Another study was conducted by Lalwani et al. [18] and showed that the most frequently prescribed drug for geriatric

patients was Isosorbide Dinitrate (11.3%). Furthermore, Rathod and Lohar [19] reported that most commonly prescribed drug classes in coronary artery disease were antiplatelet drugs followed by antianginal drugs. They also found that the most commonly prescribed antianginal drug was Isosorbide Dinitrate (67.74% of antianginal drugs). The main limitation of the study is that there was no diagnosis in the outpatient electronic prescriptions.

Isosorbide Dinitrate can cause several adverse effects, so its prescribing should be monitored. Common side effects of Isosorbide Dinitrate include headache, weakness, mild dizziness, and skin changes such as redness, tingling, or warmth. Additionally, there are several serious side effects of Isosorbide Dinitrate include: heart rate changes, increased chest pain, fainting or near-fainting, nausea and vomiting, sweating, pale skin, blurry vision, and shortness of breath.

Table 1. Personal data

Variable	Category	Number	Percentage
Gender	Male	27	47.37
	Female	30	52.63
Age	20-29	1	1.76
	30-39	1	1.76
	40-49	10	17.54
	50-59	10	17.54
	More than 59	35	61.40

Table 2. Dosage forms of the prescribed Isosorbide dinitrate

Dosage forms	Number	Percentage
Tablet	46	80.70
Sublingual tablet	11	19.30

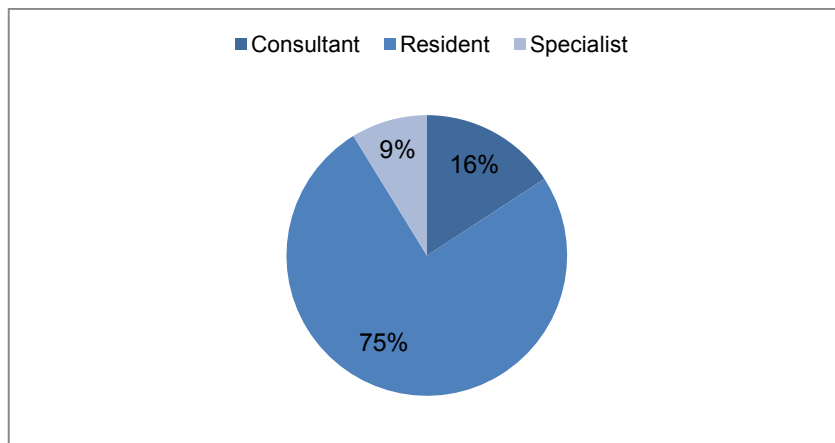


Fig. 1. The level of the prescribers

Table 3. The prescribing departments

Department	Number	Percentage
Cardiology	32	56.14
Chest	1	1.75
Emergency	6	10.53
Internal Medicine	15	26.32
Nephrology	3	5.26

4. CONCLUSION

Isosorbide Dinitrate prescribing was uncommon in the outpatient setting but it can cause several side effects and drug interactions, besides some patients are allergic to it. So the doctor should judge that the benefit to the patient is greater than the risk of side effects.

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

As per international standard or university standard, patients' written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

The study was approved by the Institutional Ethical committee with an IRB log number 2019-0153E.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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