Prescribing Trends of Amlodipine in Outpatient Setting

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Author’s contribution

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

ABSTRACT

Aim: This study aims to illustrate the Prescribing Trends of Amlodipine in Outpatient Setting in Al-Kharj city.

Methodology: This is a retrospective study that was conducted in a public hospital in Alkhafaj city. The outpatient prescriptions were reviewed to evaluate the prescription patterns of Amlodipine. The data were collected and analyzed using Excel software, the descriptive data were represented by frequencies and percentages.

Results: The majority of amlodipine prescriptions were for patients more than 40 years old. The most prescribed departments were internal medicine followed by emergency and cardiology department. Amlodipine was mainly prescribed by resident physicians.

Conclusion: Amlodipine is one of the most prescribed antihypertensive drugs. It is prescribed mainly by residents, many of them without sufficient experiences. This may lead to inappropriate prescribing patterns, as a result more efforts needed to increase the knowledge of prescribers regarding the appropriate use of cardiovascular medicines including amlodipine.

Keywords: Prescribing trends; prescribing patterns; amlodipine; outpatient.
1. INTRODUCTION

The goal of medication therapy to patients is to improve their quality of life. Drug plays a vital role in therapy but it should be used in the correct way with appropriate drugs, route, time, dosage regimen and appropriate duration as per clinical need. [1] Unsuitable usage of medication wastes resources and lessens the quality of patient’s care. Drug and Therapeutic Committee in health care facilities can significantly improve the use of drug and decrease the management costs. [2] Essential drugs should be efficacious, safe and affordable and should be used rationally in order to improve health status. [3]

The prescription is a legal document including directions for medication by a licensed practitioner to the pharmacist. [4] The prescription writing guidance is given by many organizations such as British National Formulary, World Health Organization practical manual on prescribing and Medical Council ethical codes of Nepal. [5,6,7] Many previous studies reported that the majority of doctors don’t adhere to treatment guidelines. The appropriate prescribing has an incredible influence on drug therapy as well as patient’s health [8, 9].

Cardiovascular diseases (CVDs) generally affect the circulatory system which include many diseases such as hypertension, Ischemic heart disease, stroke, peripheral artery disease and congestive heart failure. There are many modifiable risk factors of CVDs which include tobacco use, an unhealthy diet, obesity, physical inactivity and abnormal blood lipid profile. [10] Today 30% of deaths observed globally due to CVDs including nearly 28% in middle and low-income countries and about 40% in high-income countries. The worldwide increase in CVD is the result of urbanization, industrialization and associated lifestyle alterations. [11] Numerous classes of medications are available for the management of CVDs. Commonly used drugs include beta blockers, vasodilators, calcium channel blockers, angiotensin-converting enzyme inhibitors, diuretics, angiotensin receptor blockers, lipid-lowering agents and antiplatelet agents. [12] One of the commonly prescribed cardiovascular drugs is Amlodipine. It is a medicine that used to treat many cardiovascular diseases including hypertension. It is also can be used in hypertensive patients to help in preventing prevent future heart disease, strokes and heart attacks. Moreover, it is used to prevent angina caused by heart disease [13].

The study of prescribing pattern is important because it gives an idea to prescribers about monitoring and evaluation of the drugs and recommends necessary modifications if needed. [14] Several factors associated with inappropriate prescribing were unsafe and ineffective treatment, distress and unneeded economic burden to the patient and prolongation of illness. [15,16] Amlodipine is chosen in this study because it is used to treat several diseases such as angina and other conditions caused by coronary artery disease. In addition to that it is used to treat hypertension. Moreover, it is one of the commonly used medications.

This study aims to illustrate the prescribing trends of amlodipine in outpatient setting in a public hospital in Al-Kharj city.

2. METHODOLOGY

This is a retrospective study that was conducted in a public hospital in Alkharj city. The outpatient prescriptions were reviewed to evaluate the prescription patterns of Amlodipine. The inclusion criteria include all outpatient prescriptions that contains amlodipine in 2018.

The exclusion criteria include the prescriptions before or after 2018, the prescriptions that don’t contain amlodipine and the prescriptions in inpatient setting.

The data were collected and analyzed using Excel software, the descriptive data were represented by frequencies and percentages.

This study was approved by the Institutional Review Board log number 2019-0153E.

3. RESULTS

Amlodipine was prescribed in 465 outpatient prescriptions during 2018 out of 3540 cardiovascular prescriptions (13.13%); the majority of the prescriptions were prescribed to Saudi patients (79.35%). These prescriptions were for 401 patients. Table 1 shows personal data.

About 50 % of the patients were in the age level between 40-59 (49.46 %). Table 2 shows the age of the patients.
The majority of the physicians who prescribed amlodipine were residents (74.83%). The level of the Prescribers was shown in Table 3.

Amlodipine were prescribed mainly by internal medicine department (51.61 %). Table 4 shows the departments that prescribed Amlodipine in the outpatient setting.

The majority of the patients didn’t refill amlodipine prescription 342 out of 401 patients (85.28 %). The frequency of prescribing amlodipine was shown in Table 5.

Table 1. Personal data

| Variable  | Category    | Number | Percentage |
|-----------|-------------|--------|------------|
| Nationality | Saudi       | 369    | 79.35      |
|           | Non-Saudi   | 96     | 20.65      |
| Gender    | Female      | 274    | 58.92      |
|           | Male        | 191    | 41.08      |

Table 2. The age of the patients

| Age      | Number | Percentage |
|----------|--------|------------|
| Less than 20 | 6     | 1.29       |
| 20-29    | 8      | 1.72       |
| 30-39    | 33     | 7.09       |
| 40-49    | 107    | 23.01      |
| 50-59    | 123    | 26.45      |
| 60-69    | 101    | 21.72      |
| 70-79    | 54     | 11.61      |
| More than 80 | 33   | 7.09       |

Table 3. The level of the prescribers

| Variable | Number | Percentage |
|----------|--------|------------|
| Consultant | 70   | 15.05      |
| Resident  | 348    | 74.83      |
| Specialist| 47     | 10.11      |

Table 4. The departments that prescribed amlodipine in the outpatient setting

| Department                      | Number | Percentage |
|---------------------------------|--------|------------|
| Internal Medicine               | 240    | 51.61      |
| Cardiology                      | 73     | 15.69      |
| Chest                           | 6      | 1.29       |
| E.N.T                           | 1      | 0.21       |
| Emergency                       | 81     | 17.41      |
| Gastroenterology                | 2      | 0.43       |
| Infection Control               | 1      | 0.21       |
| Nephrology                      | 41     | 8.81       |
| Neurology                       | 12     | 2.58       |
| obstetrics & gynecology         | 3      | 0.64       |
| Psychiatry                      | 1      | 0.21       |
| Pediatrics                      | 3      | 0.64       |
| Urology                         | 1      | 0.21       |

Table 5. The frequency of prescribing amlodipine

| Variable                                      | Number | Frequency |
|-----------------------------------------------|--------|-----------|
| Patients who didn’t refill amlodipine prescription | 342    | 73.54     |
| Patients who refill amlodipine prescription once | 54     | 11.61     |
| Patients who refill amlodipine prescription twice | 5      | 1.07      |
4. DISCUSSION

Amlodipine was prescribed in 465 outpatient prescriptions during 2018 out of 3540 cardiovascular prescriptions (13.13%). The majority of the patients were female (58.92%). The present study demonstrated that Amlodipine is one of the most prescribed antihypertensive drugs; similarly Jhaj R et al reported that Atenolol, amlodipine and enalapril were the most frequently used individual drugs. [17] Moreover, Vishal R. Tandon et al stated that the most commonly prescribed antihypertensive drugs among Indian postmenopausal women were amlodipine, losartan, and telmisartan. [18] In contrast to that Yonas G. Tefera et al demonstrated that diuretics were the most frequently prescribed drugs in cardiovascular patients [19].

The majority of the prescriptions were for patients more than 40 years old and this is rational because the prevalence of cardiovascular disease mainly hypertension increases with advancing age specially for women after 55 years old as reported by Harrison-Bernard LM and Raj L. [20] so they use cardiovascular medications including amlodipine more than younger patients and this result is in accordance with our study that showed female patients use amlodipine more than male.

The prescriptions were mainly written by residents who can make a decision (74.83), but usually they need to be under specialists or consultants’ supervision.

The most prescribed department were internal medicine followed by emergency and cardiology so it is important to monitor cardiovascular medications specially in these departments. This result is rational because most of the outpatient setting medications are usually prescribed by emergency department. Moreover, cardiovascular medications are prescribed frequently in cardiology and internal medicine departments that include several cardiovascular cases.

About 85.28% of the patients didn’t refill amlodipine prescription; this result shows the low adherence rate to amlodipine. Similarly, van der Laan et al reported that adherence to cardiovascular medicines is often suboptimal. [21] Moreover, Ian M Kronish and Siqin Ye showed similar results and reported that approximately 50% of patients with cardiovascular disease and/or its major risk factors have poor adherence to their prescribed medications [22].

5. CONCLUSION

The present study showed that amlodipine is one of the most prescribed cardiovascular drugs (13.13%). It is prescribed commonly for both male and female patients, particularly after the age of 40 due to increase the incidence of cardiovascular diseases as the population ages. It is prescribed mainly by residents, who can make a decision, but usually they need to be under specialists or consultants’ supervision. Therefore, more efforts are recommended to monitor amlodipine therapy and to increase the knowledge of prescribers regarding the appropriate use of cardiovascular medicines including amlodipine by attending conferences, lectures and workshops.

CONSENT

As per international standard or university standard written patient consent has been collected and preserved by the author.

ETHICAL APPROVAL

It is not applicable.

ACKNOWLEDGEMENT

This Publication was supported by the Deanship of Scientific Research at Prince Sattam bin Abdulaziz University.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Promoting rational use of medicine: core components [internet]. 2002 [cited 2018]. Available from: http://apps.who.int/medicinedocs/pdf/h3011e/h3011e.pdf.
2. Organization WH. Drug and therapeutics committees: a practical guide. Geneva: World Health Organization; 2003.
3. Desalegn AA. Assessment of drug use pattern using WHO prescribing indicators at Hawassa University teaching and
referral hospital, South Ethiopia: a cross-sectional study. BMC Health Serv Res. 2013;13(1):170.

4. Ather A, Neelkantreddy P, Anand G, Manjunath G, Vishwanath J, Riyaz M. A study on determination of prescription writing errors in outpatient department of medicine in a teaching hospital. Indian J. Pharm. Pract. 2013;6(2):21–24.

5. Association BM. British national formulary 73: March–September 2017: Pharmaceutical press, 2017. Britain RPSoG.

6. De Vries T, Henning R, Hogerzeil HV, Fresle D, Policy M, Organization WH. Guide to good prescribing: a practical manual; 1994.

7. Code of ethics and professional conduct [internet]. 2017 [cited 2017]. Available from: http://www.ncm.org.np/assets/uploads/files/Code-of-Ethics-2017.pdf.

8. Jain S, Upadhyaya P, Goyal J, Kumar A, Jain P, Seth V, et al. A systematic review of prescription pattern monitoring studies and their effectiveness in promoting rational use of medicines. Perspect Clin Res. 2015;6(2):86.

9. Mortazavi SA, Hajebi G. An investigation on the nature and extent of occurrence of errors of commission in hospital prescriptions. Iran J Pharm Res. 2010;83–7.

10. Muhit MA, Rahman MO, Raihan SZ. Cardiovascular disease prevalence and prescription patterns at a tertiary level hospital in Bangladesh. J Appl Pharm Sci. 2012;2:80–4.

11. Gaziano TA, Gaziano JM. Epidemiology of Cardiovascular Disease. In: Lango DL (ed.). Harrison’s Principles of Internal Medicine. 18th edn. New York, McGraw Hill. 2012;1811–6.

12. Rathod PS, Patil PT, Lohar RP. Prescription pattern in indoor patients of cardiovascular diseases: a descriptive study in a tertiary care hospital attached to a government medical college. Int J Basic Clin Pharmacol. 2016;5:491–5.

13. https://www.nhs.uk/medicines/amiodipine/.

14. Srishyla MV, Krishnamurthy M. Prescription audit in an Indian Hospital setting using the DDD concept. Ind J Pharmacol. 1994;26:23–8.

15. Ramsay LE. Bridging the gap between clinical pharmacology and rational drug prescribing. Br J Clin Pharmacol. 1993;35:575–6.

16. Vries MD, Heluling RH. Guide to good prescribing. A practical guide WHO; 1994.

17. Dhaj R, Goel NK, Gaoatam CS, Hota D, Sancheeta B, Sood A et al. Prescribing patterns and cost of antihypertensive drugs in an internal medicine clinic. Indian Heart J. 2001;53(3):323–7.

18. Tandon VR, Sharma S, Mahajan S, Mahajan A, Khajuria V, Mahajan V et al. Antihypertensive drug prescription patterns, rationality, and adherence to Joint National Committee-7 hypertension treatment guidelines among Indian postmenopausal women. J Midlife Health. 2014 Apr;5(2):78–83.

19. Yonas G. Tefera Tamrat B, Abeebe Abebe B, Mekuria Misganaw S, Kelkay Tadesse M, Abegaz. Prescribing trend in cardiovascular patients at Ethiopian university hospital: The number of medications and implication on the clinical improvement. Pharmacol Res Perspect. 2019;e00474.

20. Harrison-Bernard LM, Rair J. Postmenopausal hypertension. Curr Hypertens Rep. 2000;2:202–7.

21. Van der Laan DM, Elders PJM, Boons CCLM, Nijpels G, Hugtenburg JG. Factors Associated With Nonadherence to Cardiovascular Medications A Cross-sectional Study. J Cardiovasc Nurs. 2019;34(4):344–352.

22. Kronish IM, Ye S. Adherence to Cardiovascular Medications: Lessons Learned and Future Directions. Prog Cardiovasc Dis. 2013;55(6):590–600.