

PATTERNS OF DRUG UTILIZATION IN CARDIOLOGY DEPARTMENT OF A TERTIARY LEVEL HOSPITAL IN BANGLADESH

FARHANA AFROJ¹, FEROZA PARVEEN², FERDOUS ARA³, MD JALAL UDDIN IQBAL⁴, REKHA RANI SAHA⁵, RINI JULIET ROZARIO⁶

¹Assistant Professor, Department of Pharmacology, Shaheed Monsur Ali Medical College, Dhaka

²Professor, Department of Pharmacology, Green Life Medical College, Dhaka

³Professor, Department of Pharmacology, Sir Salimullah Medical College, Dhaka

⁴Associate Professor, Department of Pharmacology, Sir Salimullah Medical College, Dhaka

⁵Associate Professor, Department of Pharmacology, Sir Salimullah Medical College, Dhaka

⁶Associate Professor, Department of Pharmacology, Shaheed Monsur Ali Medical College, Dhaka

ABSTRACT

A cross-sectional descriptive study was carried out among patients admitted in cardiology department from 1st January to 31st March 2011 in Sir Salimullah Medical College & Mitford Hospital, Dhaka to see the patterns of prescriptions and use of drug by using WHO core drug use indicators and some additional indices. A total of 300 patients were included in this study. The average number of drugs per encounter was 8.8 and 11.43% drugs were prescribed by generic name. Percentage of encounters with cardiovascular drugs were 64%, other drugs were 36% and 25% injection were prescribed. 70.45% drugs were prescribed from EDL of Bangladesh, the availability of copy of essential drug list was present and availability of key drugs was 74%. So the results of the present study may contribute to identify essential drug prescribing patterns in our country.

Keywords: Patterns of drug utilization, essential drug, cardiovascular system, generic name.

(Bangladesh J Physiol Pharmacol 2012;28(1&2):1-4.)

INTRODUCTION

By enhancing the standards of medical treatment at all levels of the healthcare delivery system the quality of life in developing countries can be improved.¹ Drug utilization research has been defined by the WHO as "the marketing, distribution, prescription & use of drugs in a society, medical, social & economic consequences".² The assessment of drug utilization is important for – clinical, education, economic purposes.³

Prescribing patterns need to be evaluated periodically to – increase the therapeutic efficacy, decrease adverse effects, provide feedback to prescribers.^{4,5} Drug utilization reviews are useful for obtaining information about drug use patterns and for identifying high cost drugs.⁶ To assess the scope for improvement in rational drug use in patient practice, the WHO in 1993 has formulated a set of 'core drug use indicators'.⁷

THE INDICATORS ARE

Prescribing indicators, patient care indicators, facility indicators.

Since the 1970s WHO has promoted equitable access to basic health services through the concepts of primary health care and essential drugs. The first Model list of essential drugs of 1977 preceded the famous 1978 Alma Ata Declaration on Health for all and is widely regarded as one of WHO's most influential public health achievements.⁸ Lately the term 'drugs' has been replaced by 'medicines' since 2001.⁹ Therefore, in many countries even the developed nations have applied the essential drugs list in order to improve care and manage drugs costs as the list serves to maintain drug affordability amongst a selection of essential drugs.¹⁰ The causes of access gap to essential drugs and the measures which are needed to close the gap is linked to a set of fundamental economic, social and educational factors that lie beyond the health sector system.¹¹ High costs of medicines results in poor access to the public even in rich countries.¹² Moreover, the WHO has reported that many people throughout the world cannot obtain the drugs they need due to its unaffordability.¹³ Cardiovascular diseases are one of the major health problems in Bangladesh & other developing countries. National data on incidence & mortality of coronary heart disease are few in Bangladesh. Though, a number of investigations on these aspects have been undertaken

in different countries, but still no such data has yet been published or has never been seriously looked into in our country. Therefore, the present study has been undertaken to observe the essential drug prescribing patterns among the admitted patient in the cardiology department in a tertiary level hospital in Bangladesh.

MATERIAL & METHODS

A cross sectional descriptive study was carried out in the Cardiology department of Sir Salimullah Medical College & Mitford Hospital, Dhaka, which is a 600 bed tertiary hospital that serves as a major teaching hospital in Bangladesh. All the patients (male & female) who were admitted in CCU during study period were considered for analysis. Patients who visited the cardiac unit for follow-up, patients transferred to another department and who expired were excluded from the study. The sample size was 300. The required information was collected from the treatment records of the patients admitted in cardiology department of the hospital. Treatment records were used for data analysis. The information in the treatment records was used to complete customized proforma. The age of the patients, gender, particulars of the patients, diagnosis, co-morbid conditions were noted. The average number of drugs per prescription, most commonly prescribed cardiovascular drugs, percentage of drugs prescribed by generic names, percentage of drugs prescribed from Essential Drug List (EDL) of Bangladesh, percentage of encounters with an injection prescribed and other drugs. The data was expressed as percentage, mean and total numbers.

RESULTS

A total of 300 prescriptions were analyzed during the study period. Among the 300 patients, 187 patients (62%) were male and 113 patients (38%) were female, the age group between 51-60 years accounted for the highest number [85(28.33%)], most of the patients (55%) came from middle income group and 44% from low income group. The total number of drugs amongst 300 prescriptions were 2640 and the average drugs per prescription was 8.8, the range of drugs per encounter varied from 3-10. Ten (10) drugs were prescribed in 162 prescriptions (54%) was found to be highest, out of 300 prescriptions, myocardial infarction with hypertension [160(53%)] was the most common diagnosis, the oral dosage form accounted for 74% of drugs which was prescribed most commonly. Injection use was high. A total of 25% injections and 1% inhalational drugs were prescribed. Most of the drugs were not prescribed by generic names. Only 302 drugs 11.43% were prescribed by generic names. It was seen that out of 300 prescriptions the majority of the drugs 1860 (70%) were prescribed from the Essential Drug list (EDL) of Bangladesh and only 680 drugs (30%) were other than EDL of Bangladesh. The most commonly prescribed cardiovascular drug was tab aspirin and clopidogrel 278 (93%) followed by tab atorvastatin, ramipril, amlodipine, frusemide, glyceryltrinitrate, digoxin, Inj heparin, streptokinase, amiodarone. The commonest co-morbid condition seen in these groups of patients was diabetes mellitus seen in 13.66% of the patients closely followed by chronic obstructive pulmonary disease, stroke, bronchial asthma, hypothyroidism, chronic kidney disease.

The overall findings for the WHO core drug use indicators are listed in Table 1:

Table 1
Pattern of WHO core drug use indicators in medical admitted patients.

<i>WHO core drug use indicator</i>	<i>Findings</i>
➤ Prescribing indicators	
• Average number of drugs per prescription.	8.8
• Percentage of drugs prescribed by generic name.	11.43
• Percentage of encounters with an injection prescribed.	25
• Percentage of drugs prescribed from essential drug list of Bangladesh.	70.45
➤ Facility indicators	Present
• Availability of copy of essential drug list	
• Availability of key drugs	74%
➤ Some additional indices	
• Percentage of encounters with cardiovascular drugs	64
• Percentage of encounters with other drugs	36

DISCUSSION

Cardiovascular diseases are leading causes of morbidity and mortality in the industrialized countries

and also emerging as a prominent public health problem in the developing countries. High rates of coronary heart disease in people of South Asian origin were first

reported from Singapur, South Africa & Trinidad in the 1950s; similar findings were recorded in the United Kingdom at the time of the 1971 census.¹⁴ The present study has been undertaken to see the patterns of essential drug utilization among the admitted patient in the cardiology department in a tertiary level hospital in Bangladesh. Recently, there has been a rigorous effort to ensure RUD for which WHO has identified specific drug use indicators that include number and cost of drugs, use of generic names in prescribed drugs and adherence to Essential Drug List (EDL).¹⁵ Gender analysis showed higher number of male patients [187{62%}] than female [113{38%}]. As mentioned by previous researcher in Malaysia, the frequency of prescriptions for cardiovascular drugs for men was higher than that for women.¹⁶ The age distribution of the patients showed that patients (51-60) constituted the highest number (28.33%) admitted in Hospital which was comparable with the results in Malaysia.¹⁶ In the present study, total 99% of patients were admitted in the Hospital from the low and middle income groups. The findings could be attributed to poverty which is a major risk factor for poor health outcomes. As it was observed that, 62% male patients seen in this study, majority of them were businessman (38%). Since this hospital is located in the commercial area so numbers of businessman were found to be highest and the percentage of female patients (31%) were found the second highest and most of them were housewives. The average number of drugs per prescription in this study was 8.8 which is comparable with the study done by Decan College of Medical sciences, Hyderabad, India 2010 (9.93)¹⁷ and UKM Hospital, Malaysia 2007 (7.56).¹⁶ However studies done by Kasturba Medical College, Mangalore, India 2010 (4.53)¹⁸ and Manipal Teaching Hospital, Nepal 2002 (3.39) shows incomparable with this study.¹⁹ Out of 300 prescriptions, myocardial infarction with hypertension (53%) was the most common diagnosis followed by acute coronary syndrome 19%, heart failure 10%, ischemic cardiomyopathy 6%, valvular and rheumatic heart disease 5%, angina pectoris 3% and this diagnosis was collected from the treatment records in the Mitford Hospital. In our study, high prescribing frequency of the antiplatelets 93%, lipid lowering agent 86%, antihypertensive 71%, diuretics 40%, glyceryltrinitrate 42%, anticoagulants 33%, and thrombolytic agent 20%. The commonest co morbid condition was Diabetes mellitus seen in 13.66% of the patients. The percentage of drugs prescribed by generic name was 11.43% in this study which were comparable with Hyderabad, India 6%.¹⁷ In Malaysia 45.2% and Nigeria 37.4% which were not comparable.^{16,20} 74% drugs were prescribed in oral dosage form and the percentage of prescription with an injection was 25%. The recommended target for injection exposure is 10% or less.⁷ In the present study, it was 25% injection per prescription which were comparable with China (2011) 22.63%.²¹ In this study, the percentage of drugs prescribed from essential drugs

list of Bangladesh was 70%. The possible reason for this higher value could be the prescriber's knowledge, understanding and importance of essential drug concept. The availability of key drugs was 74% as the most of the drugs were available in medicine store of the hospital. To measure the practical implementation of National Drug Policy, measurement of percentage of drug from EDL or formulary was observed. The proper selection of essential drug, useful for dealing with the majority of health problem cuts down the number of unnecessary product to be manufactured, promoted and marketed. This makes the health professionals and patients to be familiar with the essential drug easily.

CONCLUSION

Further studies from time to time are required in drug utilization pattern and standard treatment guidelines to be circulated among the practicing physicians to improve the quality of life.

ACKNOWLEDGEMENT

The authors would like to express their gratitude to the Health Board of the Belo Maternity, the ethical committee for the administrative and ethical clearances and all the gestation mothers who accepted to participate in this study.

REFERENCES

1. Patterson HR: The problems of audit and research. *J R coll Gen pract*, 1986. 36; 196.
2. World Health Organization (WHO). Introduction to drug utilization research. Oslo: 2003.
3. Uppal R, Nayak P, Sharma PL. Prescribing trends in internal medicine. *Int J Clin Pharm Ther Toxicol* 1984; 22: 373-376.
4. Krishnaswamy K, Dinesh Kumar B, Radhaiah G. A drug use survey- precepts and practices. *Eur J Clin Pharmacol* 1985; 29: 363-370.
5. Islam MS, Rahman MS, Misbahuddin M. Impact of 'Prescription Audit & Feedback' on Pattern of Prophylactic Antimicrobials in Caesarean Section: a Cost Reduction Perspective. *Bang J Physiol Pharmacol* 2007; 23: 1-9.
6. Marshner JP, Thurmann P, Harder S, Rietbrock N. Drug utilization review on a surgical intensive care unit. *Int J Clin Pharmacol Ther* 1994; 32: 447-451.
7. World Health Organization. How to investigate drug use in health facilities: Selected drug use indicators 1993. EDM Research Series No. 7 [WHO/DAP/93.1].
8. Hogerzeil HV. Essential medicines and human rights: what can they learn from each other? *Bull World Health Org* 2006; 84: 371-375.
9. Trouiller P. World Health Organization Essential Drug List – Encyclopedia of Clinical Pharmacy 2002.
10. Reidenberg MM, Walley T. The pros and cons of essential medicines for rich countries. *BMJ* 2004; 329: 1172.
11. Quick JD. Essential medicines twenty-five years on: closing the access gap. *Health Pol Plan* 2003; 18: 1-3.

12. Lopert R, Lang DL, Hill SR, Henry DA. Differential pricing of drugs: a role for cost-effectiveness analysis? *Lancet* 2002; 359:2105-2107.
13. World Health Organization (WHO). How to develop and implement a national drug policy. 2nd ed. Geneva: WHO; 2001.
14. The Daily Star (Internet Edition) Saturday. June 21, 2003. (URL:<http://www.thedailystar.net/2003/06/21/d3062101022.htm>).
15. Enwere OO, Falade CO, Salako BL. Drug prescribing pattern at the medical outpatient clinic of a tertiary hospital in southwestern Nigeria. *Pharmacoepidemiol Drug Saf* 2007; 16: 1244-1249.
16. I-Junid SM, Ezat WPS, Surianti S. Prescribing Patterns and Drug Cost Among Cardiovascular Patients in Hospital University Keban Saan Malaysia. *Med. J. Malaysia*, 2007; Vol.62, No.1.
17. Sandozi T, Nausheen F. Drug utilization study in Ischemic heart Diseases Associated with Diabetes and Hypertension. *Int J Pharma Bio Sci* 2010: 1(3).
18. Rathnakar UP et al. Profile of Drug Utilization Among Elderly Patients Attending a Cardiology Clinic In Mangalore, India. *J Pharmacy Res* 2010; 3(8), 1835-1837.
19. Shankar RP, Patha P, Shenoy N. Prescribing patterns of Drugs among Patients admitted with Cardiovascular Disorders in the internal Medicine ward: prescribing patterns in inpatients. *Internet J Pharmacol* 2002; 1(2).
20. Nwidu LL, Essien GE, N-Chris EE. Pattern of Prescription in cardiovascular diseases management in Port Harcourt City. *Nigeria J Pharm Res* 2009; 2: 1653-1658.
21. Jun Z, Linyun Li, Che Z, Vuanrong Y, Fengzi G, Heng Z, Analysis of outpatient prescription indicators and trends in Chinese Jingzhou Area between Sep.1 and 10, 2006-2009. *Afr J Pharm Pharmacol* 2011; 5: 270-275.