

Original Article

Prescribing Practices in the Outpatient Department in a Tertiary Care Teaching Hospital in Bangladesh

*Mohammad Afsan¹, Muhammad Mahbulul Alam², Nushrat Noor³, A H Hamid Ahmed⁴

¹Associate Professor & Head, Department of Pharmacology, East-West Medical College, Dhaka, Bangladesh.

²Assistant Professor, Department of Pharmacology, Popular Medical College, Dhaka, Bangladesh.

³Assistant Professor, Department of Physiology, Dhaka Central International Medical College, Dhaka, Bangladesh.

⁴Associate Professor, dept. of Nephrology, BSMMU, Dhaka, Bangladesh.

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ABSTRACT

A cross-sectional descriptive study was carried out among individuals attending the Out Patient Department (OPD) of Medicine, Paediatrics, Dermatology & Venerology, ENT, Orthopaedics and Gynaecology & Obstetrics from December 2011 to March 2012 in East-West Medical College Hospital, Dhaka, Bangladesh, to see the patterns of prescriptions using World Health Organization (WHO) core prescribing indicators and some additional indices. A total of 300 prescriptions were collected and analyzed by the 3rd year MBBS students in this study. The average number of drugs per encounter was 3.22 and 5.33% drugs were prescribed by generic name. Use of antibiotic (48.67% of encounters) was frequent, but injection use (6.67% of encounters) was within the recommendation of WHO. Only 26.09% drugs were prescribed from national essential drug list. Percentage of encounters with a NSAID, an anti-ulcerant, an antihistamine, a calcium preparation and a multivitamin & multimineral prescribed were 44.33%, 43.33%, 22.33%, 19.33% and 15.67% respectively. So, the findings from current study showed a trend towards inappropriate prescribing, particularly the over-prescribing of antibiotics and under-prescribing of generic drugs and also most of the drugs were prescribed out of national essential drug list. Hence, there would be needed for effective intervention program to encourage the physicians and healthcare providers in promoting more appropriate drug use.

Introduction

Drug utilization research has been defined by the World Health Organization (WHO) in 1977 as “the marketing, distribution, prescription and use of drugs in a society, with special emphasis on

the resulting medical, social and economic consequences”.¹ The assessment of drug utilization is important for clinical, educational and economic purposes.² Prescribing patterns need to be evaluated periodically to increase the therapeutic efficacy, decrease adverse effects and provide feedback to prescribers.^{3,4}

Inappropriate drug prescribing is a global problem, particularly in developing and

*Address of Correspondence:

Dr. Mohammad Afsan,

Associate Professor & Head,

Department of Pharmacology, East-West Medical College, Dhaka.

Cell No: +880 1712152360.

E-mail: mafsan@yahoo.com

transitional countries.⁵ Irrational drug use leads to reduction in the quality of drug therapy, wastage of resources, increased treatment cost, increased risk for adverse drug reactions and emergence of drug resistance.⁶

Theoretical courses for undergraduate students in Medical Colleges do not prepare them adequately for rational therapeutics. Medical students need realization and understanding about rational prescribing. This is not achieved properly because their Pharmacology teaching has been focused more on theory than that of practical aspect.⁷

Therefore, the present study has been undertaken by the 3rd year MBBS students of East-West Medical College, Dhaka, Bangladesh, a tertiary care private Medical College Hospital to make them realize & understand properly about rational prescriptions. This study also helps the clinicians to take appropriate measure for the improvement of prescribing patterns and to prevent prescribing errors and thus promote rational use of drugs.

Methods

A cross-sectional descriptive study was carried out in the Department of Pharmacology & Therapeutics at the East-West Medical College Hospital (EWMCH), a tertiary care private hospital, Dhaka. The study was carried out over a 120 days period from December 2011 to March 2012. A total of 300 data were collected from OPD of different disciplines (Medicine, Paediatrics, Dermatology & Venerology, ENT, Orthopaedics and Gynaecology & Obstetrics) by the 3rd year MBBS students of EWMC. The students were divided into 10 groups, each group consisting of 5 students. Each group was instructed to collect 30 prescriptions. Prescriptions were randomly collected from postgraduate specialists. Follow up visits during the study period were included and were counted as separate visits. Patients visiting the emergency department or who got admitted during OPD visit were not included in the study. The data were analyzed with each group of students in subsequent practical session in the "Prescribing Indicators form" as recommended by the INRUD / WHO. The core prescribing indicators are-

1. Average number of drugs prescribed per prescription
2. Percentage of drugs prescribed by generic names
3. Percentage of encounters with an antibiotic prescribed
4. Percentage of encounters with an injection prescribed
5. Percentage of drugs prescribed from national Essential Drug List (EDL)

In addition to core prescribing indicators, percentage of encounters with a NSAID, an anti-ulcerant, an antihistamine, a calcium preparation and a multivitamin & multiminerals prescribed were also calculated in this study.

The data was expressed as percentage, mean and total numbers.

Results

A total of 966 individual drugs were prescribed in 300 prescriptions, giving an average of 3.22. The range of drugs per encounter varied from 0-8. There were only 18 prescriptions (6%) wherein no drug was prescribed. As shown in Table I, three (3) drugs were prescribed in 92 prescriptions (30.67%) was found to be highest among 300 prescriptions. Only 27.67% (83) patients were prescribed up to 2 drugs and the rest 72.33% (217) patients were prescribed 3 to 8 drugs.

Table I: Number of drugs prescribed per prescription

Prescription containing number of drugs	Number of prescriptions	N (%)
Zero	18 (6.00)	
One	15 (5.00)	83 (27.67)
Two	50 (16.67)	
Three	92 (30.67)	
Four	66 (22.00)	
Five	42 (14.00)	
Six	15 (5.00)	217 (72.33)
Seven	01 (0.33)	
Eight	01 (0.33)	
Total		300 (100)

A group of drug which was most commonly prescribed was NSAIDs [133 prescriptions (44.33%)]. At least one antibiotic was prescribed in 146 (48.67%) of the 300 encounters. The most commonly prescribed antibiotic was cefuroxime 21 (7%). The percentage of

encounters with an injection prescribed was 6.67%. Other than tetanus vaccine, rabies vaccine and Oral rehydration salt, drugs were not prescribed by generic names. That is, only 16 drugs (5.33%) were prescribed by generic names. It was also seen that out of 300 prescriptions 47 (15.67%) had at least one multivitamin and multimineral prescribed which was not included in national EDL. Only 252 drugs (26.09%) out of 966 drugs in 300 prescriptions were prescribed from the national EDL (Table II).

Table II: Drugs prescribed from EDL of Bangladesh

Drugs	Total number of drugs (%) N= 966
Included within EDL	252 (26.09)
Excluded from EDL	714 (73.91)

In the present study, the most commonly prescribed essential and non-essential drugs were paracetamol (19.33%) and pantoprazole (18.33%) respectively. The three most commonly prescribed drugs which were included within or excluded from the EDL of Bangladesh are shown in Table III.

Table III: Three most commonly prescribed drugs which were included within or excluded from the EDL of Bangladesh

Drugs	Number of prescriptions (%) N = 300
Included within EDL	
Paracetamol	58 (19.33)
Omeprazole	26 (8.67)
Ciprofloxacin	17 (5.67)
Excluded from EDL	
Pantoprazole	55 (18.33)
Calcium + Vitamin-D	45 (15.00)
Multivitamin & multimineral	28 (9.33)

Table IV: The overall findings for the WHO core prescribing indicators

WHO core prescribing indicators	Findings
Average number of drugs per prescription	3.22
Percentage of drugs prescribed by generic name	5.33
Percentage of encounters with an antibiotic prescribed	48.67
Percentage of encounters with an injection prescribed	6.67
Percentage of drugs prescribed from national essential drug list	26.09
Some additional indices:	
Percentage of encounters with a NSAID prescribed	44.33
Percentage of encounters with an anti-ulcerant prescribed	43.33
Percentage of encounters with an antihistamine prescribed	22.33
Percentage of encounters with a calcium preparation prescribed	19.33
Percentage of encounters with a multivitamin prescribed	15.67

Discussion

The study was an exercise in the Pharmacology practical sessions by the undergraduate medical

students about rational prescribing. This is very much important to realize and make them understand about rational use of medicine not only theoretically during their course but also practically as they will be the future prescribers of our nation.

With regard to the average number of drugs per prescription, the value found in the present study was 3.22 which was nearly comparable with the results of Nigeria (3.8).⁸ In similar studies conducted, the lower values found were 1.65 in Zimbabwe,⁹ Jordan (2.3),¹⁰ Brazil (2.4),¹¹ India (2.7)¹² and Nepal 2.91.¹³ It also showed that more than half of the patients (85.33%) were given three or more drugs. The variation in results may be due to difference in characteristics of health care delivery system, socioeconomic profile and morbidity and mortality characteristics in the population.

Since, WHO has recommended that average number of drug per prescription should be 2.0,¹⁴ the results of the study reflect polypharmacy which may lead to adverse drug reactions, increase the risk of drug interactions, dispensing errors, decrease adherence to drug regimens and unnecessary drug expenses.

A group of drug which was most commonly prescribed was NSAIDs, accounted for 133 prescriptions (44.33%) of all prescriptions studied and the paracetamol [58 prescriptions (19.33%)] – an essential drug and aceclofenac [28 prescriptions (9.33%)] – a non-essential drug were the most commonly prescribed of this class.

The percentage of drugs prescribed by generic name was 5.33% in the study which is very much less than that reported in studies conducted in Cambodia (99.8%),¹⁵ Zimbabwe (90%),⁹ India (73.4%)¹⁶ and Nepal (21.3%).¹⁷

The decreasing percentage of drugs prescribed by generic names in the hospital is a matter of concern and the reasons for these should be investigated. Generic prescribing decreases the risk of wrong medicines being given to patients as many medicines with different generic names have similar brand names. Generic medicines however are not widely manufactured in Bangladesh. There is substantial price variation between brands and on prescribing by generic name; the pharmacist can dispense a cheaper brand reducing the cost of treatment.

In the present study, the encounters with an antibiotic prescription was 48.67% which is comparable with the results of Norway (48%).¹⁴ In similar studies conducted, the antibiotic prescription is remarkably less than that reported in Iran (61.9%)¹⁸ and high than that reported in Nepal (28.3%)¹⁹, India (39.6%)¹⁶ and Zimbabwe (42%).⁹

According to WHO, 15-25% of antibiotics encountered is expectable in the countries where an infectious disease is more prevalent.^{6,20} In a 3rd world developing country like Bangladesh, prevalence of infectious diseases is higher than the developed countries. That is why; in this study the antibiotic utilization rate was higher than that of developed countries.

The WHO recommended target for injection exposure is 10% or less.²⁰ In this study, the percentage of prescription with an injection encountered was 6.67% which is less than in Zimbabwe (13%)⁹ and India (13.6%).⁶ So the observed proportion of injectable drugs prescribed may be considered acceptable according to WHO recommendations. Minimum use of injections is preferred and this reduces the risk of infection through parenteral route and cost incurred in therapy.¹⁹

It also showed that out of 300 prescriptions 47 (15.67%) had at least one multivitamin and multimineral prescribed which was not enlisted in EDL. The justification for this practice is not clear. However, some patients and doctors

believe that the multivitamin supplement may induce or enhance the patient's appetite or relief from weakness.

In this study, the percentage of drugs prescribed from EDL of Bangladesh was 26.09%. The possible reason for this lower value could be the prescribers lacking the understanding the importance of essential drug concept. The low rate of prescribing from EDL of Bangladesh may be also contributed by excessive use of multivitamin and multimineral, NSAIDs (aceclofenac) and anti-ulcerant (pantoprazole) which are not enlisted in EDL of Bangladesh.

Conclusion

This study revealed deviation from rational prescribing by the prescribers because average number of drugs per prescription was significantly higher than that recommended by WHO, generic prescribing was remarkably lower, antibiotic prescription was considerably higher, use of multivitamin and multimineral was also higher which were not included in EDL, prescribing from EDL was also found insignificant. It is suggested that periodic evaluation of prescribing practices would help to promote rational practice. Furthermore, participation of students in the evaluation exercise might improve the understanding and perception about rational use of medicine among the future prescribers.

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