

Original Article

Prescribing Trends in the Out Patient Department in a Tertiary Hospital in Bangladesh

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Abstract

A cross-sectional descriptive study was carried out among individuals attending the OPD of Medicine, Surgery and Gynaecology & Obstetrics from February 1st 2010 to April 30th 2010 in Sir Salimullah Medical College and Mitford Hospital, Dhaka, Bangladesh to see the patterns of prescriptions using World Health Organization core prescribing indicators and some additional indices. A total of 300 patients were included in this study. The average number of drugs per encounter was 3.6 and 1.33% drugs were prescribed by generic name. Use of antibiotic (48% of encounters) was frequent, but injection use (1.33% of

encounters) was very low. Only 43.16% drugs were prescribed from EDL of Bangladesh. Percentage of encounters with an antiulcerant, a NSAID and a multivitamin & multimineral prescribed were 69%, 68.67% and 39.33% respectively. So the finding from current study shows a trend towards inappropriate prescribing, particularly the over-prescribing of antibiotics and under-prescribing of generic drugs & from essential drug list of Bangladesh. Hence, there is a need for effective intervention programme to encourage the physicians and healthcare providers in promoting more appropriate drug use.

Key words: Prescribing, essential drug, rational use of drug.

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}

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Drug utilization reviews are useful for obtaining information about drug use patterns and for identifying high cost drugs.⁵

Prescribers can only treat patients in a rational way if they have access to an essential drugs list and essential drugs are available on a regular basis.⁶

Inappropriate drug prescribing is a global problem.⁷ 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.⁸

Unethical drug promotion and marketing of substandard and unnecessary drugs in Bangladesh were very common before 1982. Instead of producing essential drugs, most drug manufacturers manufactured non-essentials such as vitamins, tonics, enzymes, gripe waters and cough mixtures. To stop these practices, Bangladesh formulated a pioneering National Drug policy (NDP) in 1982. The Drugs (Control) Ordinance, 1982, was promulgated subsequently to implement the NDP.

The principal objectives of the NDP were to make available essential drugs; ensure good quality drugs; control drug prices; ensure rational use of drugs; develop an effective drug monitoring system; improve the standard of hospital and retail pharmacies and ensure good manufacturing practices.^{9,10}

Though, a number of investigations on prescribing practices 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. Like all other developing countries, irrational and inappropriate use of drugs is very

common in Bangladesh. Therefore, the present study has been undertaken to observe the prescribing patterns in a tertiary level hospital in Bangladesh.

It may also help the clinician 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 at the Sir Salimullah Medical College and Mitford Hospital (SSMC & MH), a tertiary care hospital, Dhaka. The study was carried out over a 90 days period of February 1st 2010 to April 30th 2010. A total of 300 patients were included in the study. New patients attending the outpatient department of Medicine, Surgery and Gynaecology and Obstetrics in Sir Salimullah Medical College & Mitford Hospital during the study period were considered for analysis. 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 average number of drugs per prescription, number of drugs prescribed per prescription, most common diagnosis, most commonly prescribed antibiotics, most commonly prescribed groups of drugs, percentage of drugs prescribed by generic names, percentage of drugs prescribed from Essential Drug List (EDL) of Bangladesh, percentage of encounters with an antibiotic and an injection prescribed and also percentage of encounters with an antiulcerant, a NSAID and a multivitamin and multimineral prescribed were calculated. The data was expressed as percentage, mean and total numbers.

Results:

A total of 1082 individual drugs were prescribed for 300 drug encounters, giving an average of 3.6. The range of drugs per encounter varied from 1-8. There was not a single prescription wherein no drug was prescribed. As shown in Table I, four (4) drugs were prescribed in 109 prescriptions (36.33%) was found to be highest among 300 prescriptions. 14.67% (44) patients were prescribed up to 2 drugs and the rest 85.33% (256) patients were prescribed from 3 to 8 drugs.

Table I
Number of drugs prescribed per prescription

Prescription containing number of drugs	Number of prescriptions (%)	N (%)
One	13 (4.33)	
Two	31 (10.33)	44 (14.67)
Three	97 (32.33)	
Four	109 (36.33)	
Five	32 (10.67)	
Six	12 (4)	256 (85.33)
Seven	05 (1.67)	
Eight	01 (0.33)	
Total	300 (100)	

Table II
Most common diagnosis among outpatients

Diagnosis	Number of cases (%) N = 300
Peptic ulcer disease	35 (11.67)
Low back pain	28 (9.33)
Diarrhoea	19 (6.33)
Urinary tract infection	17 (5.67)
Infertility	17 (5.67)

Peptic ulcer disease [35 (11.67%)] was the most common diagnosis. The five most common individual illnesses among outpatients are shown in Table II.

Table III
Most commonly prescribed groups of drugs

Groups of drugs	Number (% of total) N = 1082
Antiulcerants	207 (19.13)
NSAIDs	206 (19.03)
Multivitamins & multiminerals	118 (10.90)
Fluoroquinolones	76 (7.02)
Anti-amoebsics	53 (4.90)

Groups of drug which were commonly prescribed were antiulcerant [207 prescriptions (69%)]. The five most commonly prescribed groups of drugs are shown in Table III.

Table IV
Most commonly prescribed antibiotics

Antibiotics	Number of prescriptions (%)
Ciprofloxacin	67 (22.33)
Metronidazole	53 (17.67)
Amoxicillin	17 (5.67)
Cefixime	15 (5)
Cefuroxime	10 (3.33)

At least one antibiotic was prescribed in 144 (48%) of the 300 encounters. The most commonly prescribed antibiotic was ciprofloxacin 67 (22.33%). The five most commonly prescribed antibiotics are shown in Table IV.

Table V
Drugs prescribed from EDL of Bangladesh

Drugs	Total number of drugs (%) N= 1082
Included within EDL	467 (43.16)
Excluded from EDL	615 (56.84)

Other than tetanus toxoid, drugs were not prescribed by generic names. That is only four drugs (1.33%) were prescribed by generic names. It was also seen that out of 300 prescriptions 118 (39.33%) had at least one multivitamin and multimineral prescribed which was not included in EDL of Bangladesh. Only 467 drugs (43.16%) out of 1082 drugs in 300 prescriptions were prescribed from the EDL of Bangladesh (Table V).

Table VI

Five most commonly prescribed drugs which were included within or excluded from the EDL of Bangladesh

Drugs	Number of prescriptions (%) N = 300
Included within EDL	
Omeprazole	148 (49)
Ciprofloxacin	67 (22.33)
Paracetamol	66 (22)
Metronidazole	53 (17.67)
Ferrous fumarate + Folic acid	37 (12.33)
Excluded from EDL	
Multivitamin & multimineral	118 (39.33)
Indomethacin	45 (15)
Ranitidine	40 (13.33)
Calcium carbonate	39 (13)
Tiemonium methylsulfate	37 (12.33)

In the present study, the most commonly prescribed essential and non-essential drugs were omeprazole (49%) and multivitamin & multimineral (39.33%) respectively. The five most commonly prescribed drugs which were included within or excluded from the EDL of Bangladesh are shown in Table VI.

Table VII

The overall findings for the WHO core prescribing indicators	
WHO core prescribing indicators	Findings
Prescribing indicators:	
Average number of drugs per prescription	3.60
Percentage of drugs prescribed by generic name	1.33
Percentage of encounters with an antibiotic prescribed	48
Percentage of encounters with an injection prescribed	1.33
Percentage of drugs prescribed from essential drug list of Bangladesh	43.16
Some additional indices:	
Percentage of encounters with an antiulcerant prescribed	69
Percentage of encounters with a NSAID prescribed	68.67
Percentage of encounters with a multivitamin and multimineral prescribed	39.33

Discussion:

The results of the study allowed us to access the prescriptions dispensed at SSMC & MH. Recently, there has been a rigorous effort to ensure RUD for which WHO has identified specific drug use indicators that include number of drugs, use of antibiotics, injections and generic names in prescribed drugs and adherence to Essential Drug List.^{6,7}

With regard to the average number of drugs per prescription, the value found in the present study was 3.6 which was comparable with the results of Nigeria (3.8).¹¹ In similar studies conducted, the lower values found were 1.65 in Zimbabwe,¹² Jordan (2.3),¹³ Brazil (2.4),¹⁴ India (2.7)¹⁵ and Nepal 2.91.¹⁶ 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 2.0,¹⁷ 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.

There were about 170 prescriptions out of 300 prescriptions with the diagnosis mentioned. Peptic ulcer disease (11.67%) was the most common indication for visiting the OPD followed by low back pain (9.33%), diarrhoea (6.33%) and urinary tract infection (5.67%).

Groups of drug which was commonly prescribed was antiulcerant, accounted for 207 prescriptions (69%) of all prescriptions studied and the omeprazole [148 prescriptions (49%)] was the most commonly prescribed of this class.

The percentage of drugs prescribed by generic name was 1.33% in the study which is very much less than that reported in studies conducted in Cambodia (99.8%),¹⁸ Zimbabwe (90%),¹² India (73.4%)¹⁹ and Nepal (21.3%).²⁰ 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% which is comparable with the results of Norway (48%).¹⁷ In similar studies conducted, the antibiotic prescription is remarkably less than that reported in Iran (61.9%)²¹ and high than that reported in Nepal (28.3%)²², India (39.6%)¹⁹ and Zimbabwe (42%).¹²

According to WHO, 15-25% of antibiotics encountered is expectable in the countries where an infectious disease is more prevalent.^{6,8} 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. However, this result does not indicate that the prescription pattern was better than in other countries.

The WHO recommended target for injection exposure is 10% or less.⁶ In this study, the percentage of prescription with an injection encountered was 1.33% which is less than in Nepal (3.1%),²² Zimbabwe (13%)¹² and India (13.6%).⁸ 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.²²

It also showed that out of 300 prescriptions 118 (39.37%) 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 43.16%. 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 (Indomethacin) and antiulcerant (Ranitidine) which are not enlisted in EDL of Bangladesh. So that the higher percentage of non-essential drugs in this study is responsible for inappropriate use of medicines.

Conclusions:

From the result of this study, it can be concluded that inappropriate drug prescribing, inadequate supply of essential drugs and inappropriate use of drugs are major problems in Bangladesh. The drugs control authorities should be better equipped and

more vigilant to cope with the present situation. Health professionals and drug manufacturers should be more committed in order to achieve the goals of the National Drug Policy.

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Medical Updates:

Introducing a Simplified Approach to Insulin Therapy in Type 2 DM.

To investigate whether the addition of a single bolus of insulin glulisine (glulisine), administered at either breakfast or main mealtime, in combination with basal insulin glargine (glargine) and oral antidiabetic drugs (OADs), provides equivalent glycaemic control in patients with type 2 diabetes, irrespective of the time of glulisine injection. A national, multicenter, randomized, open-label, parallel-group study of 393 patients with type 2 diabetes who were suboptimally controlled [haemoglobin A1c (HbA1c) > 6.5-9.0% and fasting blood glucose (BG) > 6.7 mmol/l] on their previous glargine and OAD regimen. A single injection of glulisine was added, either at breakfast or at main mealtime, to their existing therapy. The per-protocol group (n=316) showed improved HbA1c (baseline vs. end-point) in the breakfast (7.4 vs. 7.0%; p<0.0001) and main mealtime groups (7.3 vs. 6.9%; p<0.0001). Glulisine given at breakfast was equally effective in controlling HbA1c as glulisine given at the main mealtime [adjusted HbA1c mean difference (95 % confidence interval): 0.0481% (-0.115 to 0.211); p<0.0001 for equivalence]. Overall, 30.7 % of patients achieved HbA1c ≤6.5% at end-point but slightly more marked when considering only those patients with HbA1c 7.0% at baseline and who reached HbA1c ≤7.0% at end-point (44.1% overall), with 52.2 and 36.5 % for main mealtime and breakfast groups, respectively (p=0.028). Most postprandial BG values improved within each group, while the number of hypoglycaemias was low and comparable between the two treatment groups. A single bolus of glulisine, added to glargine and OADs, resulted in significantly improved HbA1c levels, irrespective of whether glulisine was administered at breakfast or at main mealtime. These results may represent a simplified and effective approach to treatment intensification in type 2 diabetes patients.

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