

DRUG UTILIZATION AMONG SURGICAL OUTPATIENTS

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REZUMAT

Objective: Studiile de utilizare a medicamentelor trebuie efectuate periodic în vederea creșterii eficienței terapeutice, a scăderii efectelor adverse, oferind un feedback prescriptorilor, în vederea unei utilizări raționale a medicamentelor. Analiza sistematică a prescripțiilor la pacienții chirurgicali în ambulator este deficitară în cadrul spitalelor din Nepalul de Vest. Studiul de față a fost efectuat în vederea obținerii de informații asupra unor modele de prescripție, utilizând indicatorii WHO/INRUD, evaluând critic prin folosirea unor criterii predeterminate. **Material și metode:** Studiul a fost efectuat pe un interval de timp de un an (1.01.2004 - 31.12.2004) la Spitalul Universitar din Pokhara, Nepal. Au fost selecționate în vederea analizei 595 de prescripții făcute în cadrul Departamentului de chirurgie ambulatorie. Au fost notate vârsta, sexul și diagnosticul pacienților. S-au calculat procentajul medicamentelor prescrise din listele de medicamente esențiale și prețul mediu pe prescripție. **Rezultate:** 323 din pacienți au fost bărbați și 262 femei. Injecții și antibiotice au fost prescrise în 5,21%, respectiv 31,4% din cazuri. Doar 21,3% din medicamente au fost prescrise folosind denumirea generică a medicamentelor. Antibioticele au fost cele mai frecvent prescrise, urmate de antiinflamatoarele nesteroidiene și de medicamentele antiulceroase. S-au notat diverse probleme la 108 prescripții (18,1%). Prețul mediu pe prescripție a fost de 1,89 USD ± 0,98 (DS). **Concluzii:** Prescripțiile cu utilizarea denumirii generice a medicamentelor din listele esențiale trebuie încurajate. Sesiunile educaționale, în special pentru medicii tineri, de prezentare a metodelor corecte de prescriere a medicamentelor, trebuie încurajate.

Cuvinte cheie: utilizare medicamente, modele de prescripție, indicatori WHO/INRUD

ABSTRACT

Objectives: Drug utilization studies should be periodically performed in order to increase therapeutic efficacy, decrease adverse effects and provide feedback to prescribers to promote rational use of drugs. Systematic audit of prescriptions among surgical outpatients are lacking in hospitals in Western Nepal. The present study was carried out to obtain information on drug prescribing patterns, analyze the drug use using WHO/INRUD indicators and critically analyze the prescriptions using predetermined criteria. **Material and methods:** The study was carried out over a one-year period (from 01.01.2004 to 31.12.2004) at the Manipal Teaching Hospital, Pokhara, Nepal. 595 prescriptions from the surgical outpatient department were selected for analysis. The age, sex and diagnosis of the patients were noted. The percentage of drugs prescribed from the essential drug lists and the mean cost of drugs per prescription was calculated. **Results:** 323 patients were male, 262 were female, while the sex was not written in 10 prescriptions. Injections and antibiotics were prescribed in 5.21% and 31.4% of encounters. Only 21.3% of drugs were prescribed by generic name. Antibiotics were most commonly prescribed, followed by non-steroidal anti-inflammatory drugs and anti ulcer drugs. Various problems were noted with 108 prescriptions (18.1%). The mean ± SD cost of drugs per prescription was 1.89 ± 0.98 USD. **Conclusions:** Prescribing by generic name and from the essential drug lists should be encouraged. Educational sessions, especially for junior doctors, on the correct method of writing prescriptions, are required. Further studies are needed.

Key Words: Drug utilization, prescribing patterns, WHO/INRUD drug use indicators

INTRODUCTION

Drug utilization has been defined as the marketing, distribution, prescription and use of drugs in a society with special emphasis on the resulting medical and social consequences.¹ Third world countries spend 30-40% of their total health budget on drugs, some of which

are useless and expensive.² Clinical audit is a method of ensuring quality care and basically depends upon data gathered in retrospect from the medical records. The British government white paper on working for patients, defines audit as a systemic, critical analysis of the quality of medical care including the procedures used for diagnosis and treatment, the use of resources and the resulting outcome of the patients.³

Monitoring of prescription and drug utilization patterns should be done periodically to increase the therapeutic efficacy, decrease the adverse effects and provide feedback to the prescriber to ensure rational use of medicines.^{4,5} A previous study among medical outpatients had shown considerable scope for improvement in the prescribing of drugs.⁶ Studies on drug prescribing patterns and systematic audit of prescriptions among surgical outpatients are lacking

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in hospitals in Western Nepal; hence the present study was carried out. The objectives of the study were to:

a. Obtain information on the prescribing patterns of drugs in the surgical outpatient department (OPD) during the study period.

b. Analyze the patterns of drug use using the World Health Organization (WHO)/ International Network for the Rational Use of Drugs (INRUD) indicators.⁷

c. Calculate the mean \pm SD cost per prescription.

d. Critically analyze the prescriptions using pre-determined criteria.

MATERIAL AND METHODS

The study was carried out over a one-year period (01.01.2004 - 31.12.2004) at the Manipal Teaching Hospital, a tertiary care hospital in Pokhara city, Western Nepal. All new patients attending the surgical outpatient department (OPD) on the first ten days of each calendar month were taken up for analysis. A specially designed proforma was used to collect the required information from each patient. The age and sex of the patients were recorded. The number of drugs per prescription was observed and the mean \pm standard deviation (SD) number was calculated. The number of patient encounters where an injection and an antibiotic was prescribed was obtained.

The percentage of drugs prescribed by generic name and by the parenteral route was calculated. The diagnosis written on the prescription was noted. The median duration of prescription was determined. The duration of the drug prescribed for the longest time period in each prescription was taken as the duration of the prescription.

The percentage of drugs prescribed from the Essential Drug list of Nepal and the WHO List of Essential drugs was calculated.^{8,9} The percentage of drugs which were fixed dose combinations (FDCs) was determined.

The cost of drugs was determined using the price list supplied by the hospital pharmacy. The mean \pm SD cost of drugs was determined in Nepalese rupees and United States (US) dollars.

The prescriptions were audited for the presence of name of the department, dose, frequency and duration of prescribed drugs, age and sex of the patient and the presence of the OPD number. The presence of the name and signature of the prescribing doctor was looked into. Absence of any of these parameters was taken as indicative of a problem prescription.

The ethics committee of the institution had approved the study.

RESULTS

Five hundred and ninety-five prescriptions from the surgical OPD on the first ten days of each calendar month during the year 2004 were selected for analysis. Three hundred and twenty-three (54.3%) patients were male, 262 (44%) were female while the sex was not written in 10 prescriptions. The age distribution of the patients is shown in Table 1. One hundred and seventy-six patients were between the ages of 20 to 30 years while 105 patients were in the age group 30 to 40 years.

Table 1. Age distribution of patients attending the surgical OPD and taken up for analysis.

Age (in years)	Number of patients (% of total)
0-10	31 (5.2)
10-20	96 (16.1)
20-30	176 (29.6)
30-40	105 (17.65)
40-50	71 (11.9)
50-60	46 (7.7)
\geq 60	58 (9.7)
Not written	12 (2)
Total	595

Nine hundred and twenty-five drugs were prescribed to the 595 patients. Mean \pm SD number of drugs was 1.55 ± 1.03 . An injection was prescribed in 31 encounters (5.21%). An antibiotic was prescribed in 187 encounters (31.4%). One hundred and ninety-seven of the 925 drugs (21.3%) were prescribed by generic name. One hundred and sixty drugs (17.3%) were prescribed by parenteral route.

Sixty-one patients (10.2%) were suffering from swellings at different sites, 32 (5.4%) were on follow up after surgery, 25 patients (4.25) were suffering from lump breast while 22 (3.7%) were suffering from fissure-in-ano. The other common diagnoses were epididymoorchitis, hemorrhoids, urinary tract infection and cellulitis. The diagnosis was not written in 28 prescriptions. 381 drugs (41.2%) were prescribed from the Essential drug list of Nepal while 337 drugs (36.4%) were prescribed from the WHO list of Essential drugs. Two hundred and forty-four drugs (26.4%) were FDCs. Cotrimoxazole was the only FDC prescribed from the Essential drug list of Nepal. Ampicillin and cloxacillin combination was most commonly prescribed followed by the combination of ibuprofen and paracetamol. The duration of

prescription is shown in Table 2. The median duration of prescription was 7 days.

Table 2. Duration of prescription in the surgical OPD.

Duration (in days)	Number of prescriptions (% of total) N =595
0	118 (19.9)
1	8 (1.3)
2	21 (3.5)
3	27 (4.5)
4	17 (2.9)
5	116 (19.5)
7	95 (16)
10	20 (3.4)
>10	100 (16.8)
Not written	73 (12.2)

Antibiotics were the most commonly prescribed group of drugs [195 drugs (21.1%)]. Non-steroidal anti-inflammatory drugs (NSAIDs) [182 drugs (19.7%)], antiulcer drugs [98 drugs (10.6%)] and laxatives [77 drugs (8.3%)] were also commonly prescribed.

The most commonly prescribed individual drugs are shown in Table 3. Diclofenac sodium was most frequently prescribed, followed by ibuprofen-paracetamol combination and ampicillin-cloxacillin combination.

Table 3. Most commonly prescribed drugs in the surgical OPD.

Drug	Number prescribed (% of total drugs) N =925
Diclofenac sodium	73 (7.9)
Ibuprofen-Paracetamol combination	67 (7.2)
Ampicillin-Cloxacillin combination	63 (6.8)
Ranitidine	59 (6.4)
Milk of magnesia + liquid paraffin suspension	42 (4.5)
Doxycycline	34 (3.7)
Lidocaine + Hydrocortisone + Zinc oxide + Allantoin ointment	30 (3.2)
Omeprazole	29 (3.1)
Vitamin preparations	24 (2.6)
Povidone iodine	15 (1.6)
Serratiopeptidase	14 (1.5)

Various problems were noted with 108 prescriptions (18.1%). The common problems noted are shown in Table 4. The duration of treatment was

absent in 73 prescriptions while the diagnosis was not written in 28 prescriptions. The FDC of ampicillin and cloxacillin was the most commonly prescribed antibiotic accounting for 63 of the 925 drugs prescribed (6.8%). Doxycycline [34 (3.7%)], metronidazole [24 (2.6%)] and cloxacillin [15 (1.6%)] were other common antibiotics.

Table 4. Common problems noted with prescriptions in the surgical OPD.

Problem encountered	Number of prescriptions
Prescriptions with problems	108*
Duration of treatment not written	73
Sex absent	10
Diagnosis absent	28
Age absent	12
Signature of doctor absent	7
OPD number absent	4
Department not written	3
Frequency of drug not written	3

* More than one problem may have been present in a single prescription

The cost of drugs in each individual prescription was calculated. The mean \pm SD cost of drugs per prescription was 139.18 \pm 72.8 Nepalese rupees (1.89 \pm 0.98 USD) (1 USD \approx 74 Nepalese rupees).

DISCUSSION

The average number of drugs per prescription is an important index of the standard of prescribing and the scope for review and educational intervention in prescribing practice. The mean \pm SD number of drugs was 1.55 \pm 1.03. Our results were comparable to those reported from a tertiary care hospital in India.¹⁰ A study from China had reported that generally 2-3 drugs were prescribed per patient.¹¹ A previous study from Nepal had reported that the majority of medical outpatients were prescribed one or two drugs.⁶

An injection was prescribed in 5.21% of encounters while an antibiotic was prescribed in 31.4% of encounters. The percentage is less than that reported in a Pakistani study.¹² However, the number is more than that reported from two tertiary care hospitals in Delhi, India.¹³ The number of antibiotics prescribed should be as low as possible and should be prescribed only for bacterial diseases. Excessive use of injections is wasteful of scarce nursing resources and increases the risk of spread of infections.

Only 21.3% of drugs were prescribed by generic

name. The percentage is less than the 32.64% prescribed previously.⁶ The number is however, marginally higher than that reported from three teaching hospitals in Pakistan.¹⁴ Prescribing by generic name can reduce the cost incurred on drugs and the risk of medication errors. Excess of prescribing by brand names may be considered as evidence of vigorous promotional activities by pharmaceutical companies.

Around 26% of the drugs prescribed were FDCs. The percentage of FDCs prescribed was less than that reported in previous studies.^{15,16} The advantage of FDCs is lesser number of drug doses to be taken by the patient and improved compliance. However, the FDC may not contain the required amount of individual drugs. Cotrimoxazole (a single prescription) was the only FDCs prescribed from the Essential drug lists.

The percentage of drugs prescribed from the Essential drug lists was low compared to that reported in the literature.^{13,14} Though the Essential drug list was mainly developed for primary health care facilities, prescribing of Essential drugs should be encouraged. Efforts should be made to develop a hospital formulary.

Problems were observed with the use of antibiotics. The common problems observed were the use of the FDC of ampicillin and cloxacillin (which in many instances contained inadequate doses of each constituent antibiotic), use of ampicillin where amoxicillin may be equally effective, use of FDC of amoxicillin and clavulanic acid and use of newer and more expensive cephalosporins.

The mean cost of drugs per prescription was 139.18 Nepalese rupees (1.89 USD). The cost is lower than the 200.78 Nepalese rupees reported in a previous study.⁶ In a study from Pakistan, the average daily cost of prescribed drugs ranged from 26.1 Pakistani rupees (0.44 USD) to 133.41 Pakistani rupees (2.26 USD) (1 USD \approx 59 Pakistani rupees).¹⁷ The cost in our study is lower than that reported in these studies. The per capita income of Nepal was 244 USD in 2001-2002 and has been projected to reach 276 USD by 2003-2004.¹⁸ Cost is an important factor influencing patient compliance with treatment in a poor developing country like Nepal.

Various problems were noted in 108 prescriptions (18.1% of total prescriptions). The duration of treatment was absent in 73 prescriptions, the sex of the patient was not written in 10, while the diagnosis was absent in 28 prescriptions. In a previous study, diagnosis was mentioned in only 22.25% of prescriptions.¹⁵ In a Pakistani study, duration was not specified in 73.4%

of prescriptions.¹⁴ In a previous audit of prescriptions among patients attending the dermatology OPD, anomalies were noted in the prescriptions.¹⁹ An educational intervention was effective in improving some aspects of prescribing in a dermatology OPD in a tertiary care hospital in Nepal.²⁰

Our study had limitations. The patients were not interviewed for their knowledge of the correct dose. The rationality of the prescriptions was not looked into.

Efforts must be made to encourage prescribing by generic names and to increase prescribing from the Essential drug lists. The use of FDCs should be discouraged. Educational sessions, especially for the junior doctors on the correct method of writing prescriptions should be organized. The importance of legible handwriting, recording of age and sex of patient, the hospital number, diagnosis and dose, frequency and duration of prescribing of various drugs should be emphasized. Studies on prescribing in various outpatient departments over a longer time period should be carried out.

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