

# Prescribing pattern of drugs in the outpatient department of a tertiary care teaching hospital in Ghaziabad, Uttar Pradesh

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## ABSTRACT

The study was done to find out the current prescribing pattern in this tertiary care teaching hospital in Ghaziabad. The study was carried out at Santosh Medical College and Hospital over a period of 3 months. A total of 500 prescriptions were collected and analyzed. Total number of drugs prescribed was 1450 out of which 564 drugs were prescribed by generic names. Average number of drugs was 2.9. 327 drugs were fixed dose combinations while only 595 were from essential drug list. The mean number of drugs per prescription should be as low as possible otherwise there is increase risk of drug interaction, bacterial resistance, non-compliance and increase in cost. The prescribing practices are more of irrational types like polypharmacy, use of vitamins and injections, less number of drugs by generic names and lesser drugs from Essential Drug List. There is an urgent need for some interventions to improve the situation.

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## INTRODUCTION

Drugs play an important role in protecting, maintaining and restoring health. Lately, the term 'drugs' has been replaced by 'medicines'. The goal of drug therapy is to prevent, cure, or control various disease states (Finkel *et al.*, 2009). The pattern of prescribing reflects the physician understanding of the disease process, his knowledge and application of pharmacotherapeutics.

Over the years the prescribing pattern has undergone tremendous change and has now become just an enumeration of medicines with incomplete instructions regarding dosage, duration of treatment, follow-up instructions and therapeutic objectives without consideration of the rationality of their uses (Gaud *et al.*, 1989). A complete rational prescription establishes a doctor patient relationship which in turn translates into compliance. It also provides an insight into the nature and quality of the health care delivery system. Drugs prescribing pattern study is the study of drugs prescribed by the physicians. Such studies are helpful in exploring the commonly used groups of drugs, commonly used

drugs in each group, drugs prescribed by generic or brand names, complete instructions in terms of frequency and time of administration, duration of therapy and the therapeutic objective aimed by drug treatment, side effects and drug interactions if anticipated and follow up visits are provided. Thus it can be said that drug prescribing pattern studies can provide guidelines for establishing rational use of drugs. Inappropriate prescribing has been identified in many health facilities in developing countries. Various factors influence the prescribing behavior of the clinicians and it is difficult to change the behavior without understanding the reason behind (Soumerai, 1988). Hence the present study aims to see whether the prescriptions written by doctors are in conformity with typical prescription and whether drugs are prescribed are rational. The major objective is to analyze the prescriptions written in outpatient department of private hospital. It is necessary to define the prescribing pattern and to target the irrational prescribing habits for sending a remedial message (Mashford, 1988). The study also made efforts in bridging the gap between clinical pharmacology and rational prescribing of drugs. Our focus was to describe the types and number of medicines prescribed by doctors. We wished to examine the prevalence and extent of polypharmacy.

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## METHODS

The study was carried out at the Santosh Medical hospital, a tertiary care hospital attached to the Santosh Medical College and University. The prospective hospital based study was carried out over a period of three months from January 2009 to March 2009.

Only precompounded prescription orders that call for a drug or mixture of drugs supplied by the pharmaceutical company by its official or proprietary name and in a form that the pharmacist dispenses without pharmaceutical alteration were included in the study. Referral prescriptions and prescriptions of seriously ill patients were excluded from the study. A total of 500 prescriptions were analyzed.

For drug prescribing pattern, an assessment of total number of drugs prescribed in the prescriptions was made. Proportion of drugs prescribed by generic and proprietary names, drug formulations (oral, parenteral, topical, inhalational), number of fixed dose combinations and the drugs belonging to various groups. The data analysis was carried out manually. Data collection form was designed and used to record data and information on the prescribed drugs in the health facility. The data was expressed as percentage, mean and total numbers. Proportion and average was used to describe the observation.

## RESULTS

The drug prescribing pattern was analyzed on the basis of indicators like-total number of drugs prescribed, Generic and proprietary drugs, total drug formulations, fixed dose combinations and prescribed groups of drugs. The total number of drugs prescribed was 1450 (Table-1).

The oral dosage form accounted for 80% of drugs while 17.6% were in topical form and 2.4% in injection form like intravenous, intramuscular or subcutaneous. Only 38.83% drugs were prescribed by generic names which constitute 564 of the total drugs (Table-1). Of all the 35 injections prescribed (Table-1), 19 prescriptions had one and 8 prescriptions had 2 injections. There was none with more than two injections. However the surgical OPD prescriptions constitute the maximum percentage of injections (35.9%) The most common was tetanus toxoid. Fixed Dose Combinations (FDCs) accounted for 327 of 1450 drugs (22.59%) (Table1). These were the most common in orthopedic outpatients and least in ophthalmology outpatients. Among the different categories of FDCs analgesic-anti-inflammatory, antimicrobials, cold and cough remedies followed by multi-vitamins preparation were the most commonly prescribed FDCs. The groups of drugs commonly prescribed were antimicrobial agents, analgesics/ anti-inflammatory, multivitamins, gastro-intestinal drugs, antihistaminic. The most frequently prescribed individual drugs from the aforementioned groups were amoxy-clav, diclofenac sodium, multivitamin preparation, proton pump inhibitor and cetirizine in that order. Percentage of prescriptions with vitamin/tonic was 30.22. Percentage of drugs

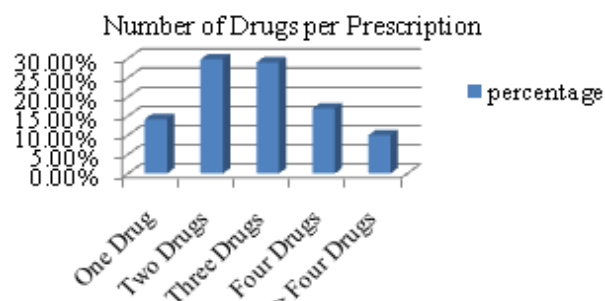
prescribed as vitamin/tonic of the total drugs was 11.12. Vitamins/tonic were the most frequently prescribed drug in Chest and TB outpatients and least number of vitamin/tonic were prescribed in ophthalmology outpatients. Only 595 drugs were prescribed from Essential Medicine List (EML) out of a total of 1450 drugs (Table-1).

**Table 1:** Analysis of prescriptions.

Details of prescription	Number
Number of prescriptions	500
Total number of drugs prescribed	1450
Average number of drugs prescribed per prescription	2.9
Number of drugs prescribed by generic names	564
Number of fixed dose combinations	327
Number of drugs from Essential drug list	595
Number of injections prescribed	35

## DISCUSSION

Total number of drugs prescribed in studied 500 outpatient prescriptions was 1450 indicating mean number of drugs per encounter as 2.9. The mean number of drugs per prescription should be as low as possible since higher figures increase the risk of drug interaction, risk of bacterial resistance, non-compliance and cost. As per WHO, the average number of drug per prescription should be 1.6 to 1.8 (Quick *et al.*, 2002). An older study by Sharif SI (Sharif *et al.*, 2008) records more than 2 drugs as polypharmacy. In our study the average number of drugs per prescription was 2.9 which is higher than that recommended by WHO or that reported by Sharif SI (Sharif *et al.*, 2008). The trend of polypharmacy (58.55%) in our study is also comparable with (Naja *et al.*, 1988 and Al-Naseer, 1991).



**Fig. 1:** Number of Drugs per prescription.

In our study, prescriptions with a single drug numbered were 70 (14.2%) (Fig.1). Polypharmacy was common with 280 (56%) prescription having more than 2 drugs, with a significant proportion of patients receiving 4 or more preparations (Fig. 1). Out of these, 135 prescriptions had 4 and more drugs (Fig. 1). Polypharmacy as such is more prevalent in our study as compared with those of Sharif SI (7.5%) (Sharif *et al.*, 2008), Ansari (40%) (Ansari *et al.*, 1998) and less prevalent when compared with the result of Karande (62.4%) (Karande, *et al.*, 2005) and Bharti (60%) (Bharti *et al.*, 2008). A study of 2953 prescriptions from public PHC in Southern India revealed that patients received an average of 2.71 drugs and that vitamins, antibiotics, analgesics and

antihistaminics were the most commonly used, accounting for more than 80% of the drugs prescribed (Bapna *et al.*, 1992). Antibiotics, antihistamines, NSAIDs, anti-ulcer drugs and corticosteroids were the group of drugs most commonly prescribed. In a study of Nepal antimicrobials, analgesics, and cough and cold remedies were as the commonly prescribed drugs (Shankar *et al.*, 2002). In a study in Duwakot health center, antipyretics, antibiotics and NSAIDs were most commonly prescribed (Bajracharya *et al.*, 2004). The use of drugs is in accordance with the high prevalence of infections, skin and parasitic diseases among outpatients in our study. Our observation regarding the dominance of antibiotics, vitamins and other supplements, NSAIDs and gastrointestinal, antihistaminics was similar to that of other studies (Naja *et al.*, 1988; Al-Naseer, 1991; Bapna *et al.*, 1992 and Moghadamania *et al.*, 2002).

Overall the most common used drugs in this study were antimicrobials. In Uzbekistan (Pavin *et al.*, 2003), the most common prescribed drugs were multivitamin i.e. 11% of all prescribed drugs. In Nigeria (Erah *et al.*, 2003) the Antimalarials, antihypertensive, antidiarrhials, and analgesics were the mostly prescribed drugs. The main reason for overuse of analgesics, antibiotics and multivitamins is that physicians tend to overestimate the severity of illness to justify the analgesic, antibiotic and multivitamins prescribing (Pavin *et al.*, 2003). They are also under pressure of patients those seeking a rapid symptomatic relief of symptoms. The patient may be disappointed if the doctor is unwilling to prescribe a drug, regardless of its likely efficacy.

Only 38.2% of drugs in our study were prescribed by generic name (Table-1). In a previous study, 32.6% of drugs were prescribed generically (Shankar *et al.*, 2002). Sarkar *et al.* had observed that 24.4% of drugs were prescribed by generic name (Sarkar *et al.*, 2002). The comparatively low percentage of drugs prescribed by generic names in our study is a matter of concern and the reasons for these needs to be looked into. Low generic prescription of the drugs could reflect the dominating influence of pharmaceutical companies. Generic prescribing decreases the risk of wrong medicines being given to patients as many medicines with different generic names have similar brand names. There is substantial price variation between brands and on prescribing by generic name; the pharmacist can dispense a cheaper brand reducing the cost treatment.

The percentage of fixed dose combinations in prescriptions is another important indicator of drug prescription. FDCs accounted for 327 (22.55%) of total of 1450 drugs prescribed (Table-1). These figures are less than those from Nepal (47%) (Shankar *et al.*, 2002) and Uttaranchal India (59%) (Rishi *et al.*, 2003). Combinations of antifungal, antibiotics and corticosteroids were common among dermatological preparations. Such FDCs do not contain the requisite amount of each individual drug and the combination is not synergistic. Moreover the FDCs were usually prescribed by brand name and this may be another factor responsible for the low percentage of drugs prescribed by generic names. The percentage of drugs prescribed from the

essential drug list is also an indicator of rationality of drug prescribing. In our study only 595 (41.03%) drugs were prescribed from Essential Medicine List (EML) out of a total of 1450 drugs (Table-1). In a study by Karande (Karande *et al.*, 2005) in Mumbai it was found that most of the drugs prescribed i.e. 90.3% (1293/1432) conformed to the WHO tenth revised model list of essential drugs. In the report of Maini (Maini *et al.*, 2002) the percentage is only 23.

The good reports of Karande (Karande *et al.*, 2005), may be indication of the presence of facility indicators like presence of essential drug list or formulary and availability of key drugs in the dispensing pharmacy. In a study by Bhartiya from Madhya Pradesh (Bhartiya *et al.*, 2008) it was seen that the overall Percentage of drugs prescribed from an EDL was 66.9%. Ideally it should be 100%. The availability of the copy of the EDL in the dispensing pharmacy is likely to be the main reason for higher percentage of the drugs prescribed from the EDL.

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