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A study of prescription pattern and prescription errors in patients referred at multi speciality hosptial in Chennai

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***Abstract*---**The aim of the study was to study of prescription pattern and prescription errors in patient referred at Multispecialty hospital in Chennai. The objective of the study is improve the quality of the prescription using WHO indicators, to evaluate the drug utilization pattern and pharmacoeconomics studies in patients of multispecialty hospital in Chennai. This study was carried out in the out-patients and in-patients of general medicine department of multispecialty hospital in Chennai during the period of January 2021 to March 2021. We conducted a prospective observational study over a period of 3 months (i.e. January-march 2021) in the triage area of our Multispecialty care hospital. The triage area of general medicine department is the place where the patient is first met by a junior doctor. We collected data on all patients received in the triage area between 8 a.m. and 3 p.m. during the study period. In this prospective study, we screened 127 patients who reported in multispecialty hospital. Out of these 127 patients majority of prescribed with antibiotics, analgesics, antacid, proton pump inhibitor, multivitamins and calcium supplements. The prescription patterns of these patients

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were taken up for the further evaluation of the study. The study shows low compliance with the prescription error. The study was done to strengthening the drug therapeutic committee (DTC) with particular emphasis on formulating policy and evidence based clinical guideline focusing essential medicine, generic prescribing, and appropriate antibiotic use and controlling polypharmacy. Everything was up to the level in these multispecialty hospital. The government has to work on the implementation of generic medicine awareness, essential medicine promotion and utilization for easy access to cost effective medicine.

***Keywords*---**prescription pattern, prescription errors, multi speciality, hosptial.

Introduction

Prescription pattern

Medicines are an integral part of the health care, and modern health care is impossible without the availability of necessary medicines. They not only save lives and promote health, but prevent epidemics and diseases too. Accessibility to medicines is the fundamental right of every person.[1] However, to bring optimal benefit, they should be safe, efficacious, cost-effective and rational. Drug utilization research was defined by World Health Organization (WHO) in 1977 as a marketing, distribution, prescription, and use of drugs in society, with special emphasis on the resulting medical, social and economic consequences. Pharmacoepidemiology is the study of the use and effects/side-effects of drugs in large numbers of people with the purpose of supporting the rational and cost-effective use of drugs in the population thereby improving health outcomes. Drug utilization research is thus an essential part of pharmacoepidemiology as it describes the extent, nature and determinants of drug exposure. Over time, the distinction between these two terms has become less sharp, and they are sometimes used interchangeably. Together, drug utilization research and pharmacoepidemiology may provide insights into many aspects of drug use and drug-prescribing. They provide much useful information on indirect data on morbidity, treatment cost of illness, therapeutic compliance, incidence of adverse reactions, effectiveness of drug consumption and choice of comparators.[2]

A medication error

A medication error can be defined as 'a failure in the treatment process that leads to, or has the potential to lead to, harm to the patient'.[3][4] The 'treatment process' involves all medications, as defined above. Medication errors can occur in:

- choosing a medicine—irrational, inappropriate, and ineffective prescribing, under prescribing and overprescribing;
- writing the prescription—prescription errors, including illegibility;
- manufacturing the formulation to be used—wrong strength, contaminants or adulterants, wrong or misleading packaging;
- dispensing the formulation—wrong drug, wrong formulation, wrong label;

- administering or taking the drug—wrong dose, wrong route, wrong frequency, wrong duration;
- Monitoring therapy—failing to alter therapy when required, erroneous alteration.

The term 'failure' in the definition implies that certain standards should be set, against which failure can be judged. All those who deal with medicines should establish or be familiar with such standards. They should institute or observe measures to ensure that failure to meet the standards does not occur or is unlikely. Everybody involved in the treatment process is responsible for their part of the process. When errors are detected, they can cause much dissatisfaction. According to a 2000 report citing UK medical defense organizations, 125% of all litigation claims in general medical practice were due to medication errors and involved the following errors: [5, 6, 7]

- prescribing and dispensing errors (including a wrong, contraindicated or unlicensed drug, a wrong dosage, or wrong administration);
- repeat prescribing without proper checks;
- failure to monitor progress; and
- Failure to warn about adverse effects (which might, however, not be regarded as a medication error).

Study design

This study was carried out in the out-patients and in-patients of general medicine department of multispecialty hospital in Chennai during the period of January 2021 to March 2021. Following details are collected from each prescription:

- Patient profile
- Details about diseases
- Details about prescription
- Other co-morbidities
- ADR
- Prescribing errors

Methodology

We conducted a prospective observational study over a period of 3 months (i.e. January-march 2021) in the triage area of our Multispecialty care hospital. The triage area of general medicine department is the place where the patient is first met by a junior doctor. We collected data on all patients received in the triage area between 8 a.m. and 3 p.m. during the study period. All patients who were referred from hospital, clinic and nursing home were assessed for antibiotic use, or other rational drug use, either ongoing or pre administered (during the stay in the referring unit). Various sources used for extracting this information included patient referral notes, discharge summary, prescription slip, left-over medicines with the patient, slip issued by chemists and recall by the patient or his or her attendant (in case none of the aforementioned sources were available) [8, 9, 10].

Data extraction forms were used to record information on demographic details, provisional/definitive diagnosis and drugs received by the patients from the point of referral. Following information was collected from either the patient or his or her attendant:

- A brief description/referral note of the current illness,
- Presenting complaints,
- Investigations done previously,
- Interventions done previously and
- Prescribed drugs list.

The collected data were summarized using descriptive statistics as appropriate. Continuous variables were summarized as mean ± standard deviation. Discrete variables were presented as proportions and percentages. We further assessed percentage of individuals in whom the initiation of drugs at point of care was inappropriate based on possibility of infective etiology as suggested by above four criteria.[11]

Result and Discussion

In this prospective study, we screened 127 patients who reported in multispecialty hospital. Out of these 127 patients majority of prescribed with antibiotics, analgesics, antacid, proton pump inhibitor, multivitamins and calcium supplements. The prescription patterns of these patients were taken up for the further evaluation of the study.

Demographic profile

In 127 Patients 76 were men and 51 were women. Maximum numbers of the patient were in the age group of 30-70 years. The patients were referred from the following surrounding in and around Chennai mostly (Table 1).

Table 1
Demographic profile

TOTAL NUMBER OF CASES	MEN	WOMEN
127	76	51

Where N= is the total number of cases referred that is 127.

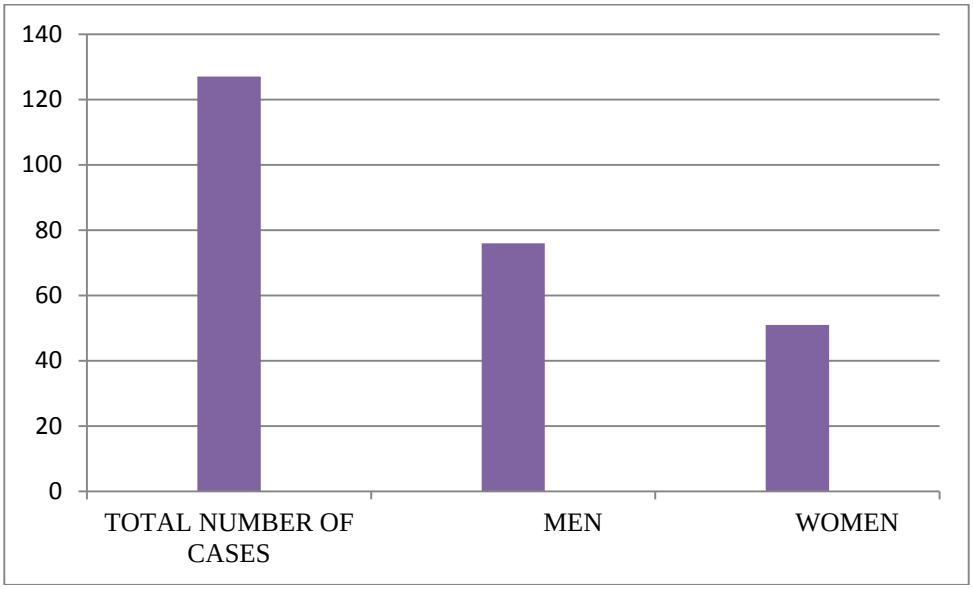


Figure 1. Demographic profile

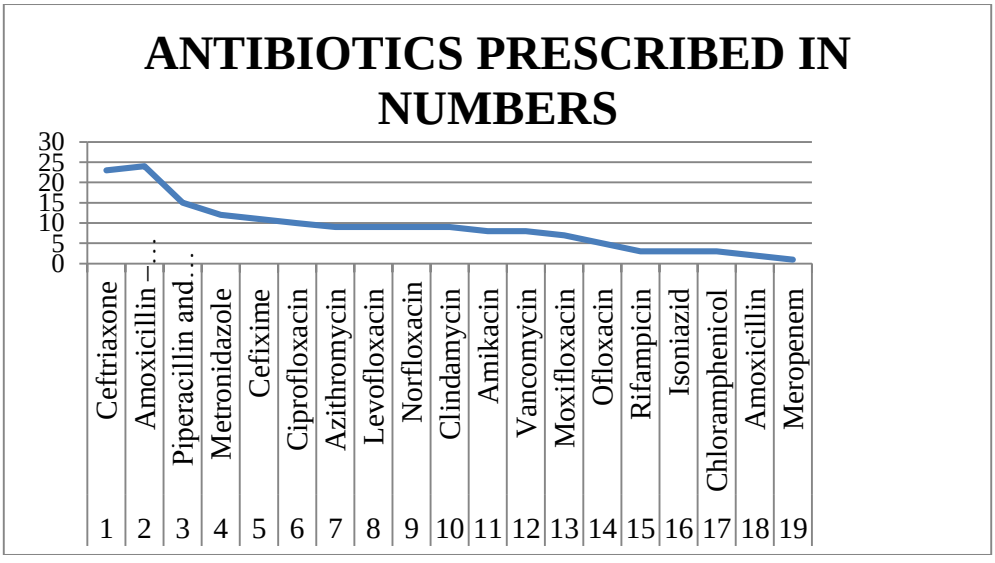
Antibiotic prescription pattern

Different types of provisional diagnosis recorded in the referral notes were 60 in number. Fever (with or without thrombocytopenia), acute exacerbation of chronic obstructive pulmonary disease (COPD), sepsis and pneumonia. In total, 19 different antibiotics were prescribed to various patients. 8 antibiotics accounted for more than 80% of prescriptions. Out of these, ceftriaxone and amoxicillin-clavulanic acid were prescribed most commonly (Table 2).

Table 2
Antibiotics prescription pattern

Sl. NO	ANTIBIOTICS	ANTIBIOTICS PRESCRIBED IN NUMBERS
1.	Ceftriaxone	23
2.	Amoxicillin –clavulanic acid	24
3.	Piperacillin and tazobactum	15
4.	Metronidazole	12
5.	Cefixime	11
6.	Ciprofloxacin	10
7.	Azithromycin	9
8.	Levofloxacin	9
9.	Norfloxacin	9
10.	Clindamycin	9
11.	Amikacin	8
12.	Vancomycin	8
13.	Moxifloxacin	7
14.	Ofloxacin	5
15.	Rifampicin	3

16.	Isoniazid	3
17.	Chloramphenicol	3
18.	Amoxicillin	2
19.	Meropenem	1



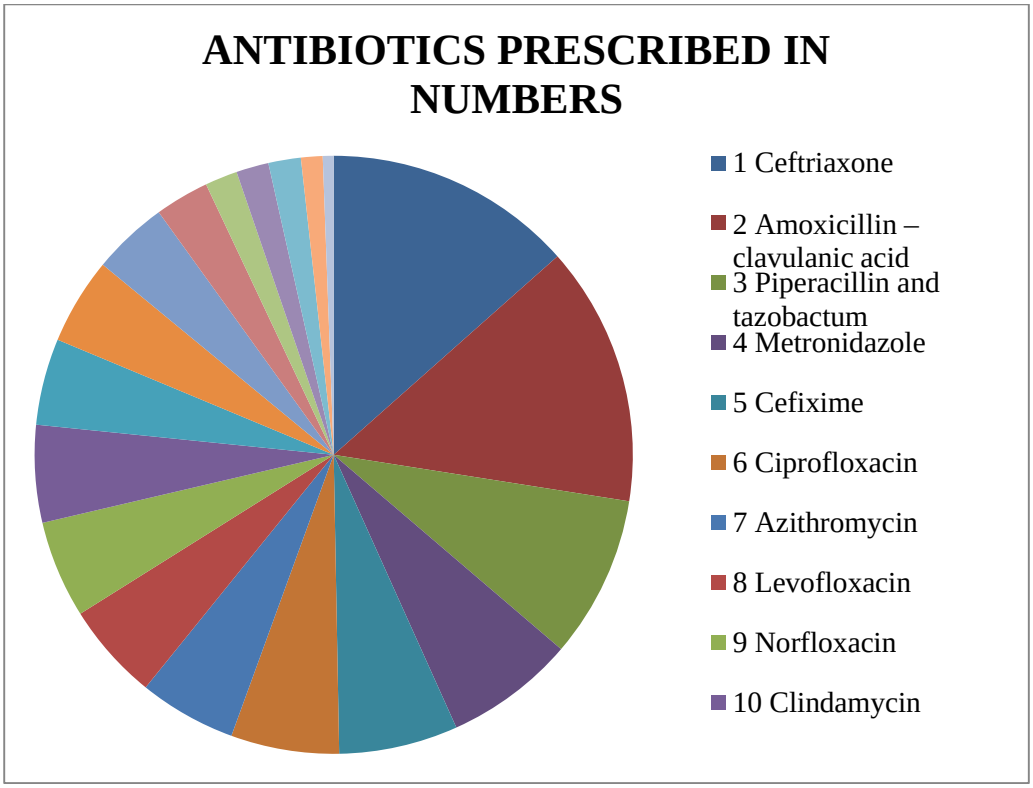


Figure 2. Antibiotics Prescription Pattern

Analgesic prescription pattern

Data were collected from the 127 patients. Analgesics are medicines that are used to relieve pain. They are also known as a pain killer or pain relievers. Technically the term analgesics refer to a medication that provides relief from pain without putting you to sleep or making you lose consciousness. Most commonly prescribed analgesics were diclofenac and paracetamol.

SI.NO	CLASSIFICATION OF ANALGESICS	PERCENTAGE ACCORDING TO THE PRESCRIPTION
1.	Aceclofenac and paracetamol	46%
2.	Diclofenac	38%
3.	Ibuprofen	10%
4.	Ketorolac	6%

The percentage of analgesics prescribed from essential medicine list and use of the generic name were found to be satisfactory, but the average number of drug per prescription was high. This study is to highlight the need to minimize the average number of drugs per prescription (Table 3).

Table 3
Analgesic prescription pattern

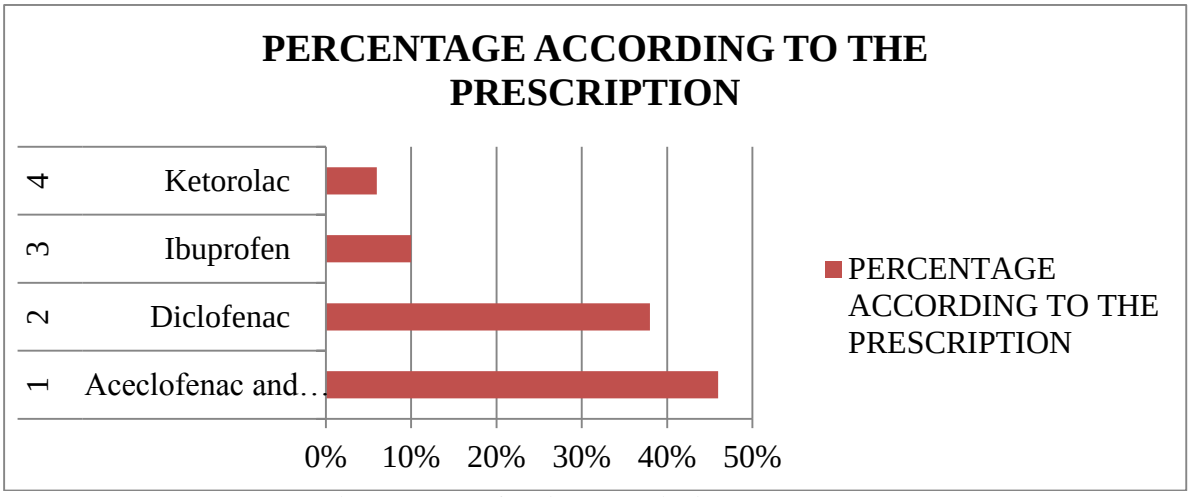


Figure 3. Analgesic prescription pattern

Prescribing pattern of non –steroidal anti-inflammatory drugs

Non-steroidal anti-inflammatory drugs are considered among the most everyday used medicine all over the world. NSAIDS are prescribed irrationally in the outpatient and in-patient department. NSAIDS are associated with side effects range from mild to severe. NSAIDS are used in clinical conditions like infective condition, fever, orthopedic pain, musculo – skeletal pain, rheumatoid arthritis, osteoarthritis, backache, headache, traumatic injury (Table 4).

Table 4
Prescribing Pattern of Non –Steroidal Anti-Inflammatory Drugs

SI.NO	CLINICAL INDICATION	DRUG PRESCRIBED
1.	Infective conditions	Aceclofenac
2.	Fever	Paracetamol
3.	Orthopaedic pain	Ibuprofen
4.	Rheumatoid arthritis	Ibuprofen
5.	Back ache	Ibuprofen
6.	Head ache	Diclofenac
7.	Osteoarthritis	Meloxicam
8.	Musculo –skeletal pain	Ibuprofen

Prescribing pattern of multivitamins

Multivitamins is a preparation intended to serve as dietary supplement with vitamins, dietary minerals, and other nutritional elements. Such preparations are available in the form of tablets, capsules, pastilles, powders, liquids, or injectable formulations. Mostly water soluble vitamins and minerals were prescribed for diabetes mellitus (type 2). Multivitamins with or without minerals were prescribed for 90 and 30 days respectively. All multivitamins were prescribed in oral route. Mostly water soluble vitamins were prescribed for fatigue and illness. Mostly multivitamins prescribed in multispecialty hospital was neurobionforte.

Prescribing pattern of antacids and proton pump inhibitors

Antacids and proton pump inhibitors are anti-ulcer drug classification and they are mostly to avoid drug induced ulcer. Out of these 127 cases more than 60 patients' prescription has proton pump inhibitors and antacids. Mostly prescribed antacid was aluminium hydroxide gel, calcium carbonate, magnesium hydroxide. And then mostly prescribed proton pump inhibitors are omeprazole, rabeprazole, pantoprazole (Table 6).

Table 5
Drug (antacid and proton pump inhibitors) prescribed among the patients in numbers

SI.NO	DRUG NAME	NO.OF .PRESCRIPTIONS
1.	Magnesium hydroxide	12
2.	Aluminum hydroxide gel	10
3.	Omeprazole	15
4.	Rabeprazole	19
5.	Pantaprazole	21

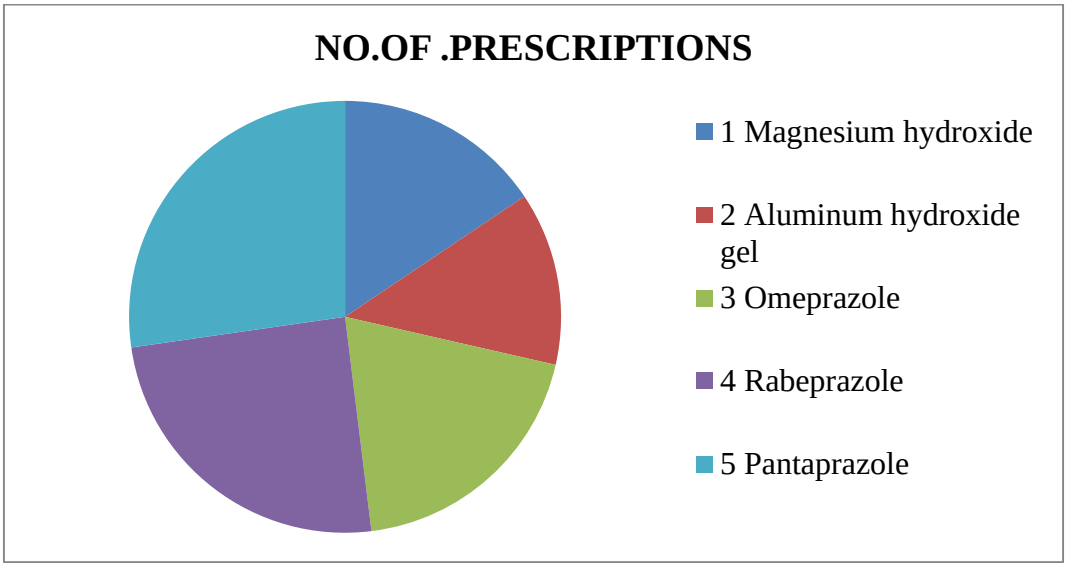


Figure 5. Drug (antacid and proton pump inhibitors) prescribed among the patients in numbers

Prescription error

Prescription errors are typically events that derive from slips, lapses, or mistakes for example, writing a dose that is order of magnitude higher or lower than the correct one because of erroneous prescription due to similarities in drug brand names or pharmaceutical names. Out of these prescription only three prescription has found errors that errors are spelling error the spelling of the drug name was written wrong on this three prescription. So on this study on prescription error has only found in three prescriptions.

Conclusion

The study show low compliance with the prescription error. The study was done to strengthening the drug therapeutic committee (DTC) with particular emphasis on formulating policy and evidence based clinical guideline focusing essential medicine, generic prescribing, and appropriate antibiotic use and controlling polypharmacy. Everything was up to the level in these multispecialty hospital. The government has to work on the implementation of generic medicine awareness, essential medicine promotion and utilization for easy access to cost effective medicine.

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