

**A STUDY ON PRESCRIBING PATTERN OF DRUGS BY GENERAL PRACTITIONERS IN A RURAL AREA OF TAMILNADU.****J.PANDIAMUNIAN\*, G.SOMASUNDARAM, K.MANIMEKALAI AND KARTIK J.SALWE.***Department of Pharmacology, Mahatma Gandhi Medical College & Research Institute, Sri Balaji Vidyapeeth, Puducherry, India.***ABSTRACT**

Evaluation of the drug utilisation has become a onetime potential tool to assess appropriateness of drug therapy. General Practitioners are more easily approachable doctors by the society. So this study planned to assess quantitative type of prescription pattern by general practitioners in identifying commonly utilized drugs by the rural and sub urban population in Tamilnadu. 600 Sample of prescriptions were collected and analysed. Most Common diagnoses were Upper respiratory tract infection (19.67%), followed by acid peptic disease (12.29%) and lower respiratory tract infection (12.29%). Maximum number of drugs prescribed to a patient in the study was 7 while minimum number of drugs per prescription was 3. At least one antimicrobial agent is prescribed in 78% of prescriptions studied. At least one Non-steroidal anti-inflammatory drug was prescribed in 65% of prescriptions. Only 5.33% of drugs were prescribed in generic names. At least one drug was prescribed in Parenteral route of administration in 52% of the prescription and Non-steroidal anti-inflammatory drugs were the most commonly prescribed drugs by parenteral route. Paracetamol and expectorant syrup were the most frequently prescribed tablet and syrup respectively.

**KEYWORDS:**General practitioners, Quantitative, Upper respiratory tract Infection, Non-steroidal anti-inflammatory drugs, Generic drugs

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## INTRODUCTION

Private Medical Practitioners or General practitioners (GPs) are the doctors who are frequently sought by the general public for the treatment of their common illnesses. They are the primary health care providers in the field of public health<sup>1</sup>. This is particularly true in rural and sub urban areas, especially in a developing country like India where the doctor to patient ratio is 1:1953<sup>2,3</sup>. GPs are more easily approachable by the society. GPs treat a wide variety of illnesses at a primary health care level and this makes them to use a wide array of drugs of different classes. At present, no guidelines are being followed by GPs for prescribing drugs in India. Critically ill and patients who need advanced and costly investigations are referred to higher centres by the GPs. Medical audit improves the standards of medical treatment at all levels of health care delivery system. The study of prescribing pattern is a component of medical audit which seeks monitoring, evaluation and necessary modifications in the prescribing practices of the prescribers to achieve rational and cost effective medical care<sup>4,5</sup>. The nature of such audits can be quantitative or qualitative or a combination of both. Quantitative audits are concerned with quantifying various facts of drug therapy use within a health care system area group whereas qualitative audits compare drug use or practice with predetermined standards or criteria<sup>6</sup>. The present study aimed to assess the quantitative type of prescription pattern by general practitioners in identifying commonly utilized drugs by the rural and sub urban population in Tamilnadu, also, to detect any irrationality of usage of drugs by general practitioners and to provide necessary suggestions for future use.

### AIMS AND OBJECTIVES

- To assess prescription patterns of drugs by general practitioners in rural area
- To find out the common presenting illnesses to general practitioners in rural area.
- To find out the percentage of drugs prescribed in generic name by general practitioners in rural area.

## MATERIALS AND METHODS

A prospective observational study was done by collecting prescriptions of general practitioners from dispensaries in rural areas located in the periphery of Villupuram district over a period of 3 months during May to July 2012. The general practitioners whose prescriptions were analysed in the study are having private clinics in rural areas. Higher centre located in the near proximity is about seven kilometres from the study location. The doctors are MBBS graduates and not specialists. Copies of prescriptions made by the GPs reaching the dispensary was made and they were taken for analysis. 30 randomly selected private practitioners out of total 64 identified practitioners (approximately 50%) in Villupuram district of Tamilnadu were selected for study purpose. Each day 5 patients' prescriptions for consecutive 4 days and thus 20 patients (20 prescriptions) from each practitioner and total 600 prescriptions from 30 private practitioners were considered for study purpose. The data collected from prescriptions were entered into a proforma sheet made for the study. The proforma contained details such as demographics (age, sex, except name of the patient), diagnosis, number and types of drugs prescribed (generic or brand name), their route of administration, frequency and investigations requested. Ethical permission to conduct the hospital based study was obtained from the Institution Ethical Committee before conducting the study. Study confidentially was maintained during and after data collection.

### STATISTICAL ANALYSIS

Collected data were entered and analysed using Microsoft office excel 2010 computer software. Data are presented as numbers, percentages and proportions.

## RESULTS

The mean ( $\pm$ SD) for age of the patients was 24.8 ( $\pm$ 15.84) years. 324 were male patients and remaining 276 were females. 474 were

adults and 126 were below 12 years. Most Common diagnoses encountered in the study were Upper respiratory tract infection (19.67%), followed by acid peptic disease (12.29%) and lower respiratory tract infection (12.29%). Co-morbid conditions mentioned along with the primary diagnosis were considered as a separate diagnosis. (Table 1).

**Table 1**  
**List of diagnoses made by the practitioners as mentioned in the prescriptions**

Sr. No	Diagnosis	Number of Patients	%
1	Upper respiratory tract infection	144	19.67
2	Acid Peptic Disease	90	12.29
3	Lower Respiratory tract Infection	90	12.29
4	Myalgia	70	9.5
5	Anaemia	44	6.01
6	Pyrexia of unknown origin	38	5.1
7	Typhoid fever	27	3.6
8	Impetigo	25	3.41
9	Chronic obstructive pulmonary disease	25	3.41
10	osteoarthritis	23	3.14
11	Others	156	20.08

Maximum number of drugs prescribed to a patient in the study was 7. Minimum number of drugs was 2. Mean ( $\pm$ SD) number of drugs per prescription was 3.1( $\pm$ 1.584). Number of patients who received 6 or more drugs per prescription (Polypharmacy) was 33. The three most commonly prescribed tablets were Paracetamol (21.57%) followed by Cefixime (12.29%), and pantoprazole (10.44%). (Table 2)

**Table 2**  
**List of drugs prescribed as a single drug.**

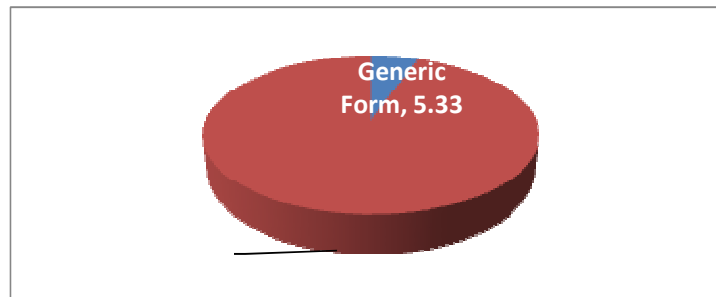
Sr. No	Tablets	Number of times prescribed	%
1	Paracetamol	279	21.57
2	Cefixime	159	12.29
3	Pantoprazole	135	10.44
4	Multivitamins	121	9.35
5	Ranitidine	98	7.57
6	Cefadroxil	64	4.94
7	Promethazine	59	4.56
8	Pheniramine	46	3.55
9	Azithromycin	38	2.93
10	Albendazole	35	2.7
11	Norfloxacin	28	2.16
12	Aceclofenac	28	2.16
13	Amoxicillin	20	1.54
14	Cetirizine	19	1.46
15	Methyl prednisolone	17	1.31
16	Others	147	11.36

The three most commonly prescribed fixed dose combination of drugs were Paracetamol + Aceclofenac + Serratiopeptidase followed by Ofloxacin + Ornidazole and Paracetamol + Aceclofenac. (Table 3) At least one antimicrobial agent was prescribed in 78% of prescriptions studied. At least one NSAID was prescribed in 65% of prescriptions. Two Antimicrobial agents were prescribed in 5% of prescriptions.

**Table 3**  
**List of drugs prescribed as fixed dose combinations.**

Sr. No.	Drugs prescribed in fixed dose combinations	Number of times prescribed	Percentage
1	Paracetamol + Aceclofenac + Serratiopeptidase	60	28.1
2	Ofloxacin + Ornidazole	45	21.2
3	Paracetamol + Aceclofenac	22	10.32
4	Amoxicillin + Cloxacillin	20	9.38
5	Paracetamol + Lornoxicam	16	7.51
6	Cefixime + Ofloxacin	15	7.04
7	Amoxicillin + Clavulanic acid	14	6.57
8	Thiocolchicoside + Aceclofenac	10	4.69
9	Monteleukast + Fexofenadine	8	3.75
10	Glimepiride + Metformin	3	1.4

In the 600 prescriptions only 112 times(5.33%) drugs were prescribed in generic names while rest 1999 times (94.67% ) drugs were prescribed by their brand names by the General Practitioners. (Figure 1)



**Figure 1**  
**Percentage of drugs prescribed in generic and Brand names**

Syrups, Suspensions, liniments and Ointments were prescribed in 294 (49%) prescriptions by the General Practitioners. Expectorant syrup was most commonly prescribed (90 times) followed by Syrup sucralfate (33 times) and Oral rehydration solution (18 times). (Table 4)

**Table 4**  
**List of drugs prescribed as syrups, Suspensions, liniments and Ointments**

Sr. No.	Syrups, Suspensions , liniments and Ointments prescribed	No. of times prescribed	Percentage
1	Expectorant syrup	90	30.6
2	Syrup Sucralfate	32	10.8
3	Oral Rehydration Salt for oral intake	18	6.12
4	Neosporin ointment for local application	15	5.3
5	Dextromethorphan lozenges	15	5.2
6	Lidocaine+ Ofloxacin +Clotrimazole ear drops	14	4.76
7	Xylocaine gel for external application	11	3.74
8	Disodium hydrogen citrate syrup	11	3.74
9	Diclofenac+Chondroitin sulphate ointment for external application	10	3.5
10	Normal saline nasal drops	9	3.3
11	Others	69	23.46

Among the parentally prescribed drugs Paracetamol (111 patients) and Diclofenac (74 patients) which are Non-steroidal anti-inflammatory drugs were given more frequently followed by Gentamicin (46 Patients). (Table 5) Proton pump inhibitors were administered intravenously. All other injections were given intramuscularly.

**Table 5**  
**List of drugs prescribed in injection form and administered by parenteral route.**

Sr. No	Drugs prescribed as injections	Number of prescriptions	Percentage
1	Paracetamol	111	35.7
2	Diclofenac	74	23.71
3	Gentamicin	46	14.74
4	Pantoprazole	39	12.7
5	Ranitidine	15	4.8
6	Omeprazole	12	3.9
7	Iron sorbitol	9	2.9
8	Chlorpheniramine	6	2

Among the two hundred patients, 132 patients were requested to review with investigations. Total blood count (132 times), Differential blood count (132 times), Haemoglobin estimation(24 times), Urine microscopy and macroscopic examination (33 times) were the investigations requested frequently by the practitioners in the study.

## DISCUSSION

Prescription pattern evaluation has become a potential tool to assess appropriateness of drug therapy. This is important for evaluation and necessary modifications in the prescribing practices of the prescribers to achieve rational and cost effective medical care. General Practitioners are more easily approachable doctors by the society. So in this study we analysed prescription of General Practitioners who are practicing in rural area to find out prescription pattern and the rationality of prescription from them. On an average 3.1 drugs were prescribed per prescription which was similar to the studies conducted in 1996 by Baqui and Choudhary and 3.31 in another study conducted in 1998 by Rahman et al<sup>7,8</sup>. Respiratory tract infections are the commonest illness in a rural area. This might be the reason that at least one antimicrobial agent is prescribed in 78% of prescriptions studied. The results of our study are comparable to the similar study done in the Iran<sup>9</sup>. Cefixime is the most commonly prescribed antimicrobial agent and cephalosporin are the most commonly prescribed group of antimicrobial agents. This is similar to the findings of drug utilization

studies done in India<sup>10,11</sup>. In one Iranian study done by Ansari et al, the percentage of patients receiving antibiotics were higher than our study (86.2%)<sup>12</sup>.

Though the viruses are the most common cause of the respiratory tract infection, where there is no need of any antimicrobial agents, we have found that extended spectrum or broad spectrum broad-spectrum antimicrobial agents have been prescribed in most of the prescriptions. This did not match with recommended standards of antimicrobial therapy in which cost-effective and more specific agents of proven efficacy should be used. General Practitioners tendency to prescribe broad or extended spectrum antimicrobials may be to cover all possible etiologies including unusual pathogens because of his failure to demonstrate the etiology of the infection<sup>13,14</sup>. Second most common diagnosis was acid peptic disease. This is more common in the prescriptions for elderly patients than for younger patients. The reason behind this may be due to a large Section of the geriatric population is on several drugs including

NSAIDs for their chronic medical conditions. Non-steroidal anti-inflammatory drugs (NSAIDs) which are third commonly prescribed drugs mostly for arthritis and myalgia in elderly patients could be one of the culprits for acid peptic disease. This is similar to the findings of studies done in hospitalised patients.

Parenteral route of drug administration was used in 52% of the prescription. NSAIDs were most commonly prescribed drugs by parenteral route in 59.6% of prescriptions. As the pain is one of the most common causes of the patient to visit hospital these drugs are commonly prescribed. Patients want quick relief from the pain so they are commonly prescribed in injection form. In the present study, 5.33% drugs have been prescribed by their generic name which is slightly higher than the previous study done by Baqui and Choudhary in which only 4.1% drugs were prescribed in generic form<sup>7</sup>. 94.67% of prescriptions made in brand names are a considerable issue as this increases the economic burden of the patients as the generic drugs are less costly than the branded drugs. This is comparatively very high compared to other similar study reports.

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## CONCLUSION

This study provides a clue for the prescribing patterns of drugs by GPs in rural area. Our study confirms the tendency of GPs to overprescribe. Prescribing drugs by generic names need to be encouraged among the GPs. All the consultations were finished with a drug prescription, this needs an alert as the WHO guidelines suggest that all consultations need not be ended in drug prescribing. A Prescription should contain proper instructions about side effects of the prescribed drugs, other relevant advice and follow up of the patients. Also, General Practitioners should be aware that antibiotic resistance is an emerging problem created largely by overuse and inappropriate use of antibiotics. Anti-microbial agents which are less prone for resistance such as quinolones may be used more frequently in place of cephalosporin as they are also broad spectrum antibiotics. The reason of this irrational prescribing by the General Practitioners may be due to lack of knowledge on how to prescribe and there is need to re-sensitize them about the importance of rational prescribing.

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