

# Comparative Analysis of Prescription Writing by Teaching and Non-Teaching Clinicians in and around Guntur

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## Research Article

**Abstract: Aim:** To study the prescribing patterns of clinicians working in two different settings. i.e. a) Teaching clinicians (clinicians working in teaching hospital) and b) Non-teaching clinicians (clinicians involved in private practice). **Materials and methods:** Comparative cross sectional study was carried out for a period of 6 months in 2 different settings. The study is confined to a) Qualified medical practitioners in Katuri medical college and hospital (Teaching clinicians) b) Qualified medical practitioners in Private health sector(PMPs) or (Non-teaching clinicians). 450 prescriptions were collected from clinicians belonging to various departments of KMC &H and 450 prescriptions from private practitioners of Guntur city. Data were coded and entered with the help of a statistician to minimize data entry errors. Data were analysed on EPINFO version 3.5.4 and MS EXCEL. **Results:** It was found that non-teaching clinicians prescribed in average number of drugs for prescription (3.28) more than teaching clinicians (2.82). Teaching clinicians prescribed 73 drugs (5.75%) by generic name, whereas non-teaching clinicians prescribed 62 drugs (4.18%). Number of drugs prescribed from essential drug list was compared in both the settings. Teaching clinicians prescribed 860 drugs (67.76%) from the essential medicines list, whereas non-teaching clinicians prescribed only 574 drugs (38.78%) from the essential medicines list. Number of injectables prescribed by both categories of clinicians is compared. Non-teaching clinicians prescribed 130 drugs (8.78%) compared to 52 drugs (4.09%) by teaching clinicians. Teaching clinicians prescribed 283(28.30%) drug combinations compared to 462(31.21%) drug combinations prescribed by non-teaching clinicians. Among the total drugs prescribed in different categories by teaching clinicians more than 46% (46.48%) were from two major groups, antimicrobials 24.11% and NSAIDs 22.37%. Non-teaching clinicians prescribed about 54% (54.04%) Antimicrobials 29.52% and NSAIDs 24.52%. **Conclusion:** The results indicate a considerable scope for improving the prescribing patterns of drugs in both the settings.

## Introduction

A prescription order is a written instruction of doctors to pharmacist to supply drugs in particular form to a patient and the directions to the patients regarding the use of medicines. It is an important therapeutic transaction between the clinician and the patient. <sup>(1)</sup> Medicines should be used only when essential, but in practice they are used too readily. Irrational prescription is a common occurrence throughout the world <sup>(2)</sup> It is seen everywhere (in teaching and non teaching institution) at all the levels (senior and juniors) and in

all categories (family physicians, specialists, and super specialists). Irrational or misuse of drugs refers to the distribution or consumption of drugs in ways that negate or reduce their efficacy or in situations where they are unlikely to have desired effect. <sup>(3)</sup> Prescription audit shows the way towards rational use of drug. <sup>(4)</sup> WHO has defined "Rational use of drugs requires that patients receive medication appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, at the lowest cost to them and their community". <sup>(5)</sup> Ideally doctors should bind to prescribe affordable and essential medicines to the patients, WHO have defined "Essential medicines are those that satisfy the priority health care needs of the population. <sup>(6)</sup> An enormous amount of research has focused on patient's contribution to inappropriate medicine use, but much less attention has been paid to the role of professionals in this problem. Several drug utilization studies in different parts of India have been carried out in order to generate information and thereby provide suggestions to promote rational drug prescription. <sup>(7)</sup> Since the prescribing habit is likely to be influenced by several factors including geographical ones there is need for similar studies in several other parts of our country. The present study was therefore undertaken to analyse the prescriptions written by doctors practicing in a teaching hospital and those practicing in private hospitals (non-teaching) with the following objectives

I. To study the drug prescribing pattern of clinicians working in teaching hospital (Katuri medical college & hospital) and private medical practitioners in the following aspects

- (i) Whether drugs prescribed were rational
- (ii) Whether medicines were selected from essential drug list
- (iii) Whether drugs were written by generic or brand name
- (iv) To study the drug utilization pattern

II. To suggest strategies to improve prescribing patterns.

## Materials and Methods

Comparative cross sectional study was carried out for a period of 6 months in 2 different settings.

### Inclusion criteria

The study is confined to

- Qualified medical practitioners in Katuri medical college and hospital (Teaching clinicians)
- Qualified medical practitioners in Private health sector (PMPs) or (Non-teaching clinicians)

### Exclusion criteria

The study did not include RMPs, Homeopathy doctors, Ayurvedic doctors and Traditional healers.

### Study period

The study was conducted in Guntur city & KMC&H between July 2011- December 2011.

450 prescriptions were collected from clinicians belonging to various departments of KMC &H and 450 prescriptions from private practitioners of Guntur

### Data analysis

- Data were coded and entered with the help of a statistician to minimize data entry errors
- Data were analysed on EPINFO version 3.5.4 and MS EXCEL

The different variables collected in the study were expressed as frequencies and percentages.

$\chi^2$  test was used as a test of significance ( $P < 0.05$ )

## Results

During the study period 900 prescriptions were collected, out of these 450 were from teaching clinicians (KMC&H) and 450 from Non-teaching clinicians (PMPs).

**Table – 1:** Comparative analysis of prescriptions

	Teaching clinicians (KMC & H)	Non-teaching clinicians (PMPs)	P Value
No. Of Prescriptions	450	450	
No of drugs prescribed.	1269	1480	
No of drugs prescribed per prescription.	2.82	3.28	
No of drugs prescribed by generic name.	73 (5.75%)	62 (4.18%)	0.0715
No of drugs prescribed from essential medicines list.	860 (67.76%)	574 (38.78%)	0.0001
No of injectables prescribed	52 (4.09%)	130 (8.78%)	0.0001
No of drug combination prescribed.	283 (22.30%)	462 (31.21%)	0.0001
Drug combination from essential medicines list.	136 (48.05%)	121 (26.19%)	0.0001

The 450 prescriptions by teaching clinicians had 1269 drugs; where as 450 prescriptions by non-teaching clinicians had 1480 drugs. All prescriptions were evaluated for average drugs per

prescription. It was found that non-teaching clinicians prescribed on average, number of drugs per prescription (3.28) more than teaching clinicians (2.82)

**Table – 2:** Number Of drugs per prescription

	Teaching clinicians (KMC & H)	Non-teaching clinicians (PMPs)
None (0)	7 (1.55%)	0 (0.00%)
1	50 (11.11%)	2 (0.44%)
2	98 (21.77%)	62 (13.77)
3	129 (28.66%)	109 (24.22%)
4	101 (22.44%)	122 (27.11%)
5	40 (8.88%)	115 (25.55%)
6	19 (4.22%)	30 (6.66%)
7	4 (0.88%)	5 (1.11%)
8	2 (0.44%)	3 (0.66%)
9	0 (0.00%)	2 (0.44%)

Number of drugs prescribed by generic name was compared in both the settings. Teaching clinicians prescribed 73 drugs (5.75%) by generic name, whereas non-teaching clinicians prescribed 62 drugs (4.18%). Number of drugs prescribed from essential drug list was compared in both the settings. Teaching clinicians prescribed 860 drugs (67.76%) from the essential medicines list, whereas non-teaching clinicians prescribed only 574 drugs (38.78%) from the essential medicines list. Number of injectables prescribed by both categories of clinicians is compared. Non-teaching clinicians prescribed 130 drugs (8.78%) compared to 52 drugs (4.09%) by

teaching clinicians. Number of drug combinations prescribed by both categories of clinicians compared. Teaching clinicians prescribed 283 (22.30%) drug combinations compared to 462(31.21%) drug combinations prescribed by non-teaching clinicians. Out of drug combinations prescribed, the combinations were compared for whether they are from essential medicines list. Out of 283 drug combinations of teaching clinicians 136 (48.05%) are from essential medicines list, whereas out of 462 drug combinations prescribed by non-teaching clinicians only 121 (26.19%) combinations were from essential medicines list.

**Table – 3:** Different categories of drugs prescribed (Major types of drugs prescribed)

	Teaching clinicians (KMC & H)	Non-teaching clinicians (PMPs)	P Value
Antimicrobials	306 (24.11%)	437 (29.52%)	0.0017
Steroids	40 (3.15%)	59 (3.98%)	0.2856
NSAIDs	284 (22.37%)	363 (24.52%)	0.2013
Anti histaminics / cough preparations	129 (10.16%)	160 (10.78%)	0.6259
Vitamins & haematinics	116 (9.14%)	208 (14.05%)	0.0001
H <sub>2</sub> blockers / antacids	64 (5.04%)	54 (3.64%)	0.0883
Anti hypertensives	152 (11.97%)	62 (4.18%)	0.0001
Anti diabetics	51 (4.01%)	46 (3.10%)	0.2354
Others	127 (10.00%)	91 (6.14%)	0.0003

Among the total drugs prescribed in different categories by teaching clinicians more than 46% (46.48%) (590 out of 1269 drugs) were from two major groups, antimicrobials 24.11% and NSAIDs 22.37% , followed by antihypertensives 152 (11.97%), Vitamins and haematinics 116 (9.14%). There was certain variation in different categories of drugs prescribed by non-teaching clinicians. Two similar major groups Antimicrobials (437 i.e. 29.52%) and NSAIDs (363 i.e. 24.52%) were prescribed about 54% (54.04%). Other commonly prescribed drugs among non-teaching clinicians were Vitamins and haematinics (208 i.e. 14.05%), Antihistamines/cough preparations (160 i.e. 10.78%).

## Discussion

In our study it was found that mean number of drugs per prescription were 2.82 and 3.28 for teaching and non-teaching clinicians respectively. Hanumantha Rao Potharaju and S.G. Kabra in their study found that the average number of drugs per prescription was 3.1<sup>(8)</sup>. Tarun Bhatnagar, et al, in their study found that Average number of drugs was 3.07 per prescription<sup>(9)</sup>. T.M. Vijayakumar, et al in their study found that more than four drugs were prescribed in 208 prescriptions (out of 690).<sup>(10)</sup> Since, WHO has recommended that average number of drug per prescription should be 2.0<sup>(10,11)</sup>. The result of our study reflects polypharmacy which may lead to adverse drug reactions, decrease adherence to drug regimens and unnecessary drug expenses. Teaching clinicians prescribed 73 drugs (5.75%) by generic name, whereas non-teaching clinicians prescribed 62 drugs (4.18%). Most certainly, this practice gives an advantage to the pharmacist to dispense the cheapest drug or the one which is available. Phalke VD, et al, in their study showed that none of the doctors wrote the generic name of the drug.<sup>(12)</sup> Teaching clinicians prescribed 860 drugs (67.76%) from the essential medicines list, whereas non-teaching clinicians prescribed only 574 drugs (38.78%) from the essential medicines list. T.M. Vijayakumar, et al in their study found that 41.6% drugs were not in accordance with WHO essential drug list.<sup>(10)</sup> Number of injectables prescribed by both categories of clinicians is compared. Non-teaching clinicians prescribed 130 drugs (8.78%) compared to 52 drugs (4.09%) by teaching clinicians. Tarun Bhatnagar, et al in their study showed that injection use

was seen in 10% of prescriptions.<sup>(9)</sup> S. Siddiqi, et al, in their study found that over 48% of GP prescriptions had at least one injectable drug compared with 22.0% by public providers (p<0.0001). 13% of GP prescriptions had 2 or more injections<sup>(13)</sup> Dr. Manju Toppo, Dr. Nirmal Verma in their study showed that necessary injection practice amongst prescriptions was only 14.10 % of prescriptions<sup>(14)</sup>. Teaching clinicians prescribed 283 (22.30%) drug combinations compared to 462(31.21%) drug combinations prescribed by non-teaching clinicians. Out of 283 drug combinations of teaching clinicians 136 (48.05%) are from essential medicines list, whereas out of 462 drug combinations prescribed by non-teaching clinicians only 121 (26.19%) combinations were from essential medicines list. T.M. Vijayakumar, et al in their study found that the 16.8% of prescriptions contain fixed dose combination (FDC).<sup>(11)</sup> Among the total drugs prescribed in different categories by teaching clinicians more than 46% (46.48%) were from two major groups, antimicrobials 24.11% and NSAIDs 22.37%. Non-teaching clinicians prescribed about 54% (54.04%) antimicrobials 29.52% and NSAIDs 24.52%. Manoj kumar saurabh, et al, in their study found that among the total drugs prescribed in different categories by GPs, two major groups Antimicrobials 25.44%, NSAIDs 19.08 %, and PPs Antimicrobials 25.96%, NSAIDs 21.66% were prescribed<sup>(15)</sup>.

## Conclusion

- ❖ The findings of the present study indicate that the average number of drugs per prescription was significantly higher than recommended by WHO.
- ❖ The drugs prescribed by the generic names were remarkably lower.
- ❖ Majority of the prescribed drugs were not in accordance with the WHO essential medicines list.
- ❖ Overprescribing in many prescriptions indicates the increasing tendency of polypharmacy. This tendency is more prevalent in non-teaching clinicians which is evident from greater number of medications per prescription.

- ❖ The results indicate a considerable scope for improving the prescribing patterns of drugs in both the settings.

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