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## Research article

### PRESCRIBING PRACTICES OF NON TEACHING GENERAL PRACTITIONERS OF PRIVATE CLINICS AND PHYSICIANS OF A TERTIARY CARE TEACHING HOSPITAL: A COMPARATIVE CROSS SECTIONAL STUDY

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## ABSTRACT

**Background:** Doctor's prescription provides vivid information and instruction to the patient. In spite of the WHO programs, irrational prescribing is still a common practice. **Aim:** To evaluate and compare the prescribing pattern of private practitioners and physicians of a tertiary care teaching hospital in a semi urban area and detect their rationality. **Materials & methods:** 150 prescriptions, each prescribed by private practitioners and physicians of a tertiary care hospital were collected over a period of two months and evaluated. Information regarding the drugs used, drugs from the essential drug list, the use of injections, fixed dose combinations, drug prescribed by generic names were observed. **Results:** The average number of drugs per prescription prescribed by the private practitioners was 2.47 compared to 1.58 by the physicians of a tertiary care hospital. 82% of prescriptions of private practitioners had one injection prescribed in the prescription compared to 12% by physicians of a tertiary care hospital. 30 unnecessary drugs, 46 unnecessary injections and 8 irrational fixed dose combinations were prescribed by the private practitioners, whereas only 6 unnecessary drugs and 2 unnecessary injections were prescribed by the physicians of a tertiary care hospital respectively. There was no irrational fixed dose combination prescribed by them. The private practitioners prescribed 12 (3.2%) drugs by generic names, whereas the physicians of a tertiary care hospital prescribed 72 (30.3%) drugs by generic names. ( $P < 0.000$ ). 36 (9.7%) drugs prescribed by the private practitioners were not included in the essential drug list and only 2 (0.8%) drugs prescribed by the physicians of a tertiary care hospital were not included in the essential drug list. **Conclusion:** Private practitioners prescribe more irrational prescriptions on comparison with the physicians of a tertiary care teaching hospital. This may be due to the promotional pharmaceutical incentives, lack of professional updates and lack of standard treatment guidelines to the private practitioners motivating them towards irrational drug therapy to survive the competition. Competitions can be conducted for the budding medical undergraduates to inculcate the importance of rational drug therapy at early ages.

**Keywords:** Prescription audit, Irrational prescriptions, Rational prescribing

## INTRODUCTION

Prescription writing is an art to be learnt by every practitioner to provide clear, adequate information and instruction to the patient<sup>1</sup>. The WHO program on rational use of drugs aims to promote rational prescribing through various strategies that include

prescribing by generic names, adoption of essential drug list, instituting standard treatment guidelines and creating awareness about the consequences of irrational drug prescriptions<sup>2</sup>.

In spite of these measures, irrational prescribing is still a common practice among the practitioners leading to ineffective treatment, increased adverse effects and financial burden on the patient<sup>3</sup>.

Prescription monitoring can be used as a tool to define the prescribing pattern among the practitioners and provide information regarding the prevailing trend of rational and irrational use of medications in a particular region<sup>4</sup>. Moreover, it will provide feedback to the practitioners for rational prescribing in the future.

Although many studies have been undertaken to study prescribing pattern among physicians, there are scarce data on comparison between various sectors of practitioners, which will bring to lime light the group to be targeted more towards rational prescribing.

Hence the study was planned to compare the prescribing patterns of private practitioners and physicians of a tertiary care hospital in a semi-urban area, to assess the quality of prescribing according to WHO prescribing indicators and assess the rationality of prescriptions.

## **MATERIALS & METHODS:**

After getting approval from the Institutional Ethical Committee, a prospective, comparative, cross sectional study was conducted by reviewing the prescriptions prescribed by physicians of a tertiary care hospital in a semi urban area of Puducherry and compared with the private practitioners practicing in that area over a period of 2 months.

Patients of both sexes, visiting the outpatient clinics of private practitioners and those attending the outpatient department of medicine and patients willing to participate and give informed written consent were included in the study. Incomplete prescriptions, prescriptions without diagnosis, prescriptions with illegible handwriting were excluded from the study.

10 randomly selected private practitioners out of total 48 identified practitioners (20%) in Kirumampakkam commune of Puducherry were selected for the study purpose. Each day 5 prescriptions from patients visiting a private practitioner were collected for consecutive 3 days, thus 15 patient prescriptions from each practitioner to a total of 150 prescriptions from 10 private practitioners were considered for study purpose.

Data was collected by xerox copying or photocopying of the prescriptions from the nearby pharmacies of private general practitioner's clinics. Identity of the prescriber and patient were kept confidential and patient data was entered in the case record form.

Similarly each day approximately 10 prescriptions from patients attending outpatient department (OPD) of department of Medicine in tertiary care hospital were collected for consecutive 15 days and considered for comparison. Thus 150 prescriptions, each prescribed by private practitioners and physicians of tertiary care hospital were evaluated and compared.

WHO rationality indicators:

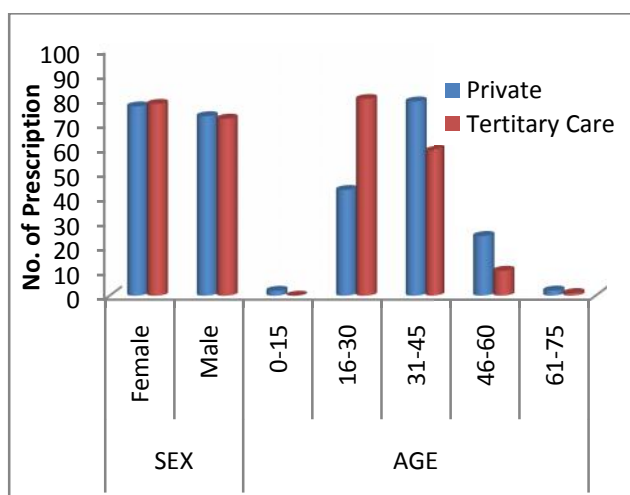
The prescribing indicators<sup>5</sup> that were measured included:

1. The average number of drugs prescribed per prescription was calculated to measure the degree of polypharmacy. It was calculated by dividing the total number of different drugs prescribed by the number of prescriptions.
2. Percentage of drugs prescribed by generic name. It was calculated by dividing the number of drugs prescribed by generic name by total number of drugs prescribed, multiplied by 100.
3. Percentage of prescriptions with an injection prescribed. It was calculated by dividing the number of patient prescriptions in which an injection was prescribed by the total number of prescriptions, multiplied by 100.
4. Percentage of drugs prescribed from an essential drug list (EDL). Percentage is calculated by dividing number of drugs prescribed and present in the essential drug list by the total number of drugs prescribed, multiplied by 100.

Collected data was entered and analyzed using Microsoft office Excel 2010 computer software. Data was presented as numbers, percentages and proportions. To assess significance of study findings, statistical tests (according to nature and distribution of data e.g- Chi square test) was applied and  $p < 0.05$  was considered as statistically significant.

## **RESULTS**

Demographic details: There was no statistical significant difference in the demographic details between the groups as depicted in Figure 1.



**Fig 1: Sex and Age distribution between the groups**

**Number of drugs prescribed:** Our study revealed that 88 prescriptions prescribed by the physicians of tertiary care hospital had one drug in it. Two drugs were prescribed in 37 prescriptions and three drugs in 25 prescriptions. No single prescription had four or five drugs per prescription. Alternatively, most of the private practitioners prescribed two drugs per prescription (63 prescriptions), 48 prescriptions had three drugs in it. One drug per prescription was seen in 21 prescriptions. Four drugs were prescribed in 10 prescriptions and five drugs per prescription in 8 prescriptions respectively and was statistically significant.

**Table 1: Number of drugs prescribed per prescription between the groups.**

Number of drugs prescribed per prescription	Number of prescriptions prescribed by private practitioners	Number of prescriptions prescribed by physicians of a tertiary care hospital	t – test comparing general practitioners and physicians of tertiary care hospital	P value
1	21	88	7.8230	<0.001
2	63	37	3.2173	0.0013
3	48	25	2.8090	0.0050
4	10	0	3.2838	0.0010
5	8	0	2.9268	0.0034
Mean ± SD of drugs prescribed totally by both groups				
	2.47 ± 1.01	1.58 ± 0.76	8.5955	<0.001

**Table 2: Number of irrational drugs prescribed between the groups.**

Parameter	Drugs prescribed by private practitioners	Drugs prescribed by physicians of tertiary care hospital	Chi square value	P value
Number of unnecessary drugs prescribed	30	6	17.5423	<0.001
Number of unnecessary injections given	46	2	45.3162	<0.001
Number of irrational drug combinations prescribed	8	0	8.2072	0.0042

**Table 3: Number of drugs prescribed by generic names between the groups**

Parameter	Private practitioners (%)	Physicians of tertiary care hospital (%)	Chi square value	P value
Number of drugs prescribed by generic names	12 (3.2%)	72(30.3%)	51.5197	<0.000
Number of drugs prescribed but not from the essential drug list	36(9.7%)	2(0.8%)	33.3994	<0.002

**Injections prescribed:** 82% of prescriptions of private practitioners had one injection prescribed in the prescription compared to 12% by physicians of a tertiary care hospital.

The results of our study revealed that 30 unnecessary drugs, 46 unnecessary injections and 8 irrational fixed dose combinations were prescribed by the private practitioners, whereas only 6

unnecessary drugs and 2 unnecessary injections were prescribed by the physicians of a tertiary care hospital. The injections, which did not comply with the diagnosis were considered unnecessary injection. There was no irrational fixed dose combination prescribed by them. The result was found to be statistically significant, revealing higher irrational

use of drugs by private practitioners and is depicted by the table 2 below.

**Prescribing by generic names:** The private practitioners prescribed 12 drugs by generic names, whereas the physicians of a tertiary care hospital prescribed 72 drugs by generic names and this was found to be highly statistically significant ( $P < 0.000$ ).

**Drugs prescribed from the essential drug list:** Our study showed 36 drugs prescribed by the private practitioners were not included in the essential drug list. Only 2 drugs prescribed by the physicians of a tertiary care hospital were not included in the essential drug list

**Most common drugs prescribed:** The most common drugs prescribed by the private practitioners were paracetamol, aceclofenac and vitamins. The physicians of a tertiary care hospital prescribed ranitidine, cetirizine and amoxicillin more commonly on comparison with the other group and depicted in the following table..

**Table 4: Most common drugs prescribed between the groups**

Drug prescribed	% of prescriptions with the drug prescribed by private practitioners	% of prescriptions with the drug prescribed by physicians of tertiary teaching care hospital
Paracetamol	23.3%	10%
Aceclofenac	28.6%	6.6%
Vitamins	31.3%	7.3%
Ranitidine	3.3%	14%
Pantoprazole	17.3%	6.6%
Cetirizine	5.3%	6.6%
Amoxicillin	4%	12%
Cephalosporins	26.6%	4.6%

## DISCUSSION

**Number of drugs per prescription:** The average number of drugs per prescription per prescription prescribed by the private practitioner was  $1.58 \pm 0.76$  and  $2.47 \pm 1.01$  by the physicians of a tertiary care hospital. Similar studies by Ansari et al<sup>6</sup> report that 40% of the prescriptions showed overprescribing. Polypharmacy defined as the concurrent use of five or more medications per single patient. The tendency of poly pharmacy was more in private sector (5.05 medications per prescription) than service sector (3.52). Over prescribing leads to increased side effects, increased cost<sup>7</sup> and increased drug interactions.

**Unnecessary drugs and injections:** Our study revealed that 82% of prescriptions had one injection prescribed in private practitioner group whereas only 12% of prescriptions of tertiary care hospital group had one injection prescribed. Similar studies reveal most of the prescriptions<sup>8-10</sup> have one injection prescribed and also have irrational fixed dose combinations<sup>11</sup>.

Similar study by Anjali pillay et al<sup>12</sup> revealed that only 13.20% FDCs were in accordance with WHO Model List of Essential Drugs. FDCs from anti-inflammatory and ant rheumatic products, vitamins, minerals, antianaemic preparations, drugs for acid related disorders, antibacterial for systemic use and cough and cold preparations were used more by private non teaching hospitals as compared to SKNMC & GH teaching hospital. This may be attributed to the patient demand for symptomatic relief and social beliefs of the patient that injections are more efficacious.

**Prescribing by generic names:** The private practitioners prescribed 12 drugs by generic names, whereas the physicians of a tertiary care hospital prescribed 72 drugs by generic names in our study. Similar study was conducted by Patel et al<sup>13</sup> and analyzed 990 prescriptions. He observed that over 90% of the prescriptions contained branded medicines only and reported that private practitioners prescribed significantly greater number of medicines and were more likely to prescribe vitamins, tonics and branded medicines. Prescribing by the brand names of the private practitioners is due to the enormous discounts given by the pharmaceutical companies to catch up the market, which adds to the drug cost for the patient.

**Prescribing from the essential drug list:** Our study showed 36 drugs prescribed by the private practitioners were not included in the essential drug list. Only 2 drugs prescribed by the physicians of a tertiary care hospital were not included in the essential drug list. Most of the drugs prescribed<sup>14</sup> but not included in the essential drug list were Aeclofenac, Cetirizine and varied combinations of Vitamins with Iron, Antioxidants. Similar studies reveal antibiotics irrationally prescribed<sup>15</sup>.

Similar studies reveal that private practitioners prescribe drugs more irrationally<sup>16,17,18</sup>. The limitations of our study include the small sample size and the limited duration of the study, which

hinders the generalisability of the results. We did not include the inpatient category.

## CONCLUSION

It is quite obvious from the results of our study that the private practitioners prescribe more drugs per prescription, more unnecessary drugs and injection and their prescriptions were found more irrational on comparison with the physicians of a tertiary care teaching hospital. This difference may be attributed to the promotional incentives given by the pharmaceutical companies to which they fall prey. Secondly, it may be due to the hospital drug policy to which the individual practitioner has to abide to. Thirdly, it may be due to the lack of professional updates by the private practitioners which on long term leads to irrational prescribing. Fourth, being the lack of standard treatment guidelines to the private practitioners which motivates the doctors towards irrational drug therapy in order to survive the competition.

Therefore, it becomes highly essential that frequent workshops on rational drug therapy should be conducted and competitions can be conducted for the budding medical undergraduates to inculcate the importance of rational drug therapy at early ages.

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## REFERENCES

1. Benet LZ. Principles of prescription order writing and patients compliance instructions. In: Goodman AG, Rall TW, Nies AS, Taylor P, (eds). Goodman and Gilman's The pharmacological basis of therapeutics. 8th ed. New York: Pergamon Press Inc. 1991:1640.
2. How to investigate drug use in health facilities: selected drug use indicators. Geneva, World Health Organization, 1993 (EDM Research Series No. 007).
3. Walker J, Mathers N. The impact of a general practice group intervention on prescribing costs and patterns. *Br J Gen Pract.* 2002; 52(476): 181–86
4. Indira B, Arun B. Auditing of prescribing pattern of doctors in tertiary care centre in Bangalore. *Pharmacologyonline* 2011; 1:405-08
5. Desalegn AA. Assessment of drug use pattern using WHO prescribing indicators at Hawassa University teaching and referral hospital, south Ethiopia: a cross-sectional study. *BMC Health Serv Res.* 2013; 13: 170.
6. Ansari KU, Singh S, Pandey RC. Evaluation of doctors for rational drug therapy. *Indian J Pharmacol* 1998; 30:43-6
7. Taylor RJ. Prescribing costs and patterns of prescribing in general practice. *J R Coll Gen Pract.* 1978; 28(194): 531–35
8. Moghdamnia AA, Mirbolooki MR, Aghili MB. General practitioners prescribing patterns in babol city, Islamic republic of Iran. *Eastern Mediterranean Health Journal* 2002;8:551-55
9. Kshirsagar MJ, Langade D, Patil S, Patki PS. Prescribing patterns among medical practitioners in Pune, India. *Bull World Health Organ* 1998; 76:271-5
10. Sagar R, Pravin D, Nitin P, Reena V, Rajendra KG. Current pattern use of irrational fixed dose combinations: a prescription audit study. *RJPBCS* 2012; 3:617-22
11. Somesh PR, Sujatha SD, Ganesh ND, Rohan CH, Prashanth SD, Nilesh NG. Irrational fixed dose combination in the Indian market: an evaluation of prescription pattern using WHO guidelines. *Int J Basic Clin Pharmacol* 2013;2:452-7
12. Pillay A, Keche Y, Yegnarayanan R, Patil V, Dangare R. *Int J Basic Clin Pharmacol* 2013; 2(1):61-8.
13. Patel V, Vaidya R, Naik D, Borker P. Irrational drug use in India: Prescription survey from Goa. *J Postgrad Med.* 2005;51:9-11.
14. Shewade DG, Pradhan SC. Auditing of prescriptions in a government teaching hospital and four retail medical stores in Pondicherry. *Indian J Pharmacol* 1998; 30:408-10.
15. Hanmant A, Priyadarshini KOP. Prescription analysis to evaluate rational use of antimicrobials. *Int J Pharm Bio Sci* 2011; 2:314-319.
16. Sneha Patel, Bharathgajjar. Evaluation and comparison of prescribing pattern of general practitioners from public and private

sectors. Natl J Physiol Pharm Pharmacol 2012; 2:33-38.

17. Gajjar BM. Evaluation and comparison of prescribing pattern of physicians from the institute and private sector for rational drug therapy [dissertation ], VallabhVidhyanagar, S.P. Univ, 1999.
18. Avijit H, Santanu KT, Mirza SA. Prescribing and dispensing activities at the health facilities of a non governmental organization. Natnl Med J India 2000; 13:177-82.
19. Bapna JS, Shewade DG, Pradhan SC. Training medical professionals on the concepts of essential drugs and rationale drug use. Br J clinPharmac 1994;37.