

Evaluation and Comparison of Prescribing Pattern of General Practitioners from Public and Private Sectors

Sneha Patel¹, Dr. Bharat Gajjar²

¹ Lecturer, Department of Pharmacology, Sardar Patel College of Pharmacy, Bakrol, Anand, Gujarat, India

² Associate Professor, Department of Pharmacology, Pramukhswami Medical College, Karamsad, Anand, Gujarat, India

Correspondence to:

Dr. Bharat Gajjar
(gajjarbm@yahoo.com)

Received: 11.04.2011

Accepted: 04.08.2011

ABSTRACT

Aims: To analyze and compare the prescribing habits of Medical officers from Public sector (PHCs) and General Practitioners from private sector

Materials and methods: Total of 200 prescriptions issued by General Practitioners holding MBBS degree, were collected. Out of this 100 prescriptions were collected from Private General Practitioners and another 100 from Medical Officers serving in Primary Health Centers. Prescription were analyzed as per age, sex, diagnosis mentioned or not, number of drugs prescribed per prescription, rationality score, rationality status of prescriptions and number of drug showing use of unnecessary drugs, injections, irrational drug or combinations. Statistical analysis was done using Students unpaired 't' test and Chi-square test.

Results: There was no significant association found between public sector and private sector in analysis of criteria -age, sex, diagnosis mentioned or not. Number of drugs prescribed per prescription(2.27 v/s 3.66, $p < 0.001$), total rationality score(25.83 v/s 20.45, $p < 0.05$), number of rational prescription (82 v/s 42, $p < 0.001$) and number of unnecessary drugs (46 v/s 108, $p < 0.05$), injections (1 v/s 15, $P < 0.05$), irrational drug or combination (1 v/s 22, $p < 0.05$)were noted from both the sectors.

Conclusion: Public sector General Practitioners are more rational in their practice as compared to General Practitioners from private sector. There is acute need to develop Standard treatment guidelines for General Practitioners (Family Physicians). These guidelines should be made available to them and they should be encouraged to use the same.

KEY WORDS: Prescription Audit; Rational Drug Therapy; General Practitioner

INTRODUCTION

Prescription order is an important transaction between the physician and patient. It is order for scientific medication for a person at a particular time.^[1] It brings into focus the diagnostic acumen and therapeutic proficiency of the physician with instruction for palliation or restoration of patient health.^[2]

It has been frequently observed that doctors are adopting polypharmacy, promoting unnecessary use of tonics and other drugs under marketing influence of drug companies and overlooking drug interaction.^[3,4] In developing country like India, a substantial proportion of medicines in the market are irrational fixed dose combinations and some of them are even hazardous. Analysis of properly selected sample of prescriptions would reveal the extent of use of irrational and hazardous drugs by doctors. This will help in assessing the extent of wastage (health wise and money wise) due to irrational prescribing and in developing ways to overcome the wastage.^[5] General practitioners play a key role in primary health care. They play a role of gatekeeper to secondary services. Our study was planned to evaluate drug utilization pattern among General Practitioners and to compare prescribing pattern of General practitioners from 'Public' and 'Private' sectors and to audit the prescriptions in terms of rationality.

MATERIALS AND METHODS

A prospective study was carried out from October 2007 to February 2008 by collecting prescriptions issued by General Practitioners to their patients visiting them for the first time (new cases). Identity of the prescriber and patient was kept confidential. Patient's data were entered into case record form. Total of 200 prescriptions were collected issued by General Practitioners holding MBBS degree. Out of this 100 prescriptions were collected from Private General Practitioners and another 100 from Medical Officers serving in Primary Health Centres. General Practitioners were explained,

and they were assured confidentiality of their identity.

Analytical Method

For the analysis we have adopted the methods of Gajjar.^[6] Analysis as per diagnosis mentioned or not, number of drugs prescribed per prescription, drug wise analysis of prescriptions, rationality score, rationality status of prescriptions and number of drug showing use of unnecessary drugs, unnecessary injections, irrational drugs or combinations.

Selection of appropriate indicators for assessing rationality of prescriptions is an important issue. The following rationality/ irrationality indicators were used.

For study of rationality of prescriptions, a maximum of 30 points score system was assigned as follows:

- Main drug - 20 points
- Complementary drug – 10 points

Out of these total points, half the points for each of these two categories of the drugs were allocated for the correctness of the type of drug chosen for the condition and half for the correctness of the dose given, including route and frequency of administration and the duration of the therapy. If more than two drugs were needed to be given in a condition. The points allocated were subdivided accordingly. For the correctness of drug, its dose and duration, standard textbooks available to Indian doctors were referred.

Negative points were given for use of

- (a) Unnecessary drugs (-5 for each drug/ formulation)
- (b) Irrational drugs (-5 for each drug/ formulation)
- (c) Hazardous drugs (-10 for each drug/ formulation)
- (d) Unnecessary injections (-5 for each injection)

Based on the above mentioned criteria for analysis, net score was calculated and each

prescription was graded accordingly as mentioned below:

- (a) 0 to 14 points –Irrational
- (b) 15 to 24 points – Semirational
- (c) 25 to 30 points – Rational

Statistical methods:

The data were analyzed using Statistical Package for Social Science (SPSS version 15.0).

In order to draw meaningful inferences, means and proportions were compared by applying following methods.

- 1. Students unpaired ‘t’ test
- 2. Chi-square test

P value less than 0.05 in case of student t test and Chi-square test were considered as significant. P value less than 0.001 were considered as highly significant.

RESULTS

Diagnosis Status

Out of 200 prescriptions, 100 prescriptions collected from public sector and 100 from private sector. In total 165 prescriptions diagnosis was mentioned, in which 81 and 84 prescriptions were from the public and private sector respectively. There was no statistical significant difference found in both sectors. ($\chi^2 = 0.38, >0.05$) (Table 1)

Table-1: Diagnosis status of prescriptions

Diagnosis	Public	Private	Total	χ^2	P
Diagnosis mentioned	81	84	165	0.38	>0.05
Diagnosis not mentioned	19	16	35		

Number of drug prescribed

Total number of drugs prescribed in 100 prescription collected from the public were 227 (Mean – 2.27 ± 0.84) as against 366 drugs in 100 prescriptions collected from the private sector (Mean – 3.66 ± 1.42). The difference between two groups was highly significant. ($t = 8.17, p < 0.001$) (Table 2)

Rationality score and status of prescriptions

Total of rationality score of 100 prescriptions collected from the public was 2583 (Mean-

25.83 ± 0.49) while it was 2085 (Mean- 20.45 ± 0.72) for 100 prescriptions collected from private sector. The difference between the two was significant stastically ($t = 6.17, p < 0.05$). (Table 3)

Table-2: Analysis of prescriptions according to number of drug prescribed

No of drug prescribed	No of prescriptions		Total	t	P
	Public	Private			
1	17	7	24	8.17	p<0.001
2	47	14	61		
3	28	24	52		
4	8	28	36		
5	0	18	18		
6	0	6	6		
7	0	3	3		
Total Prescriptions	100	100	200		

Table-3: Total Score

Parameter	Public	Private	t	P
Total score	2583	2045	6.17	<0.05
Mean score \pm SEM	25.83 ± 0.49	20.45 ± 0.72		

Number of rational prescriptions amongst the 100 prescriptions the public and private sector each were 82 and 42 respectively, with statistical significant difference between two group ($\chi^2 = 33.94, p < 0.001$). Fifteen prescriptions were semirational, amongst the prescriptions collected from the public sector as against 42 prescription collected from the private sector showing a highly significant difference ($\chi^2 = 17.86, P < 0.001$) and 3 irrational prescriptions were from public sector while in the private sector the 16 number of irrational prescriptions were collected with highly significant difference ($\chi^2 = 9.82, P < 0.001$). (Table 4)

Table-4: Rationality status of prescriptions

Parameter	Score	Public	Private	χ^2	P
Rational Prescriptions	25-30	82	42	33.94	<0.001
Semirational Prescriptions	15-24	15	42	17.86	<0.001
Irrational Prescriptions	0-14	3	16	9.82	<0.001

Table-5: Rationality status of prescriptions

Parameter	Public		Private		χ^2	P
	No. of Drugs	No. of Pres.	No. of Drugs	No. of Pres.		
Unnecessary Drug	46	40	108	64	9.66	< 0.05
Unnecessary Injections	1	1	15	9		
Irrational drugs/ combinations	1	1	22	22		
Total	48	42	145	95		

Number of prescriptions showing use of unnecessary drugs/ injections or irrational drugs /combinations

As Shown in table 5, forty six unnecessary drugs were prescribed in 40 prescriptions collected from public sector, while 108 unnecessary drugs were prescribed in 64 prescriptions collected from private sector. Only one unnecessary injection was prescribed in one prescription from public sector against 15 unnecessary injections in 9 prescriptions from private sector. Only one irrational drug combination was prescribed in one prescription in public sector whereas 22 irrational drugs/ combinations were prescribed in 22 prescriptions collected from the private sector. There was some association found between the groups and prescribing of unnecessary drug, unnecessary injections and irrational drug or combinations. ($\chi^2 = 9.66$, < 0.05). No hazardous drug was prescribed by any general practitioner either in public or private sector.

DISCUSSION

General practitioners have occupied a central position in the provision of primary health care for many years. General practice is cost effective, low-tech, and flexible. During the consultation trust and understanding between the doctors and patient are developed, which facilitate effective care to be offered. General practitioners are also right being encouraged to see their patients as part of population so that the doctor can take part in planning for or the health gain of the whole population. Their role of gatekeeper to

secondary services is vital not only to the individual but also to the effective and economic functioning of the health service. The gatekeeper role should recognize the need for vigilance not only over entry to secondary care services but also over exit from these services.

The rationality of drug prescription has been studied in various countries, but most of studies have limited on numeric analysis of certain indicator, number of drugs per prescription, percentage of antibiotics prescribed etc. Moreover there are many studies available on hospital based analysis.

In the present study there was no association found between the public and private sector in relation to status of diagnosis. Number of prescriptions collected from the public sector with mentioned diagnosis against the private sector was 81% and 84% respectively. In the study by Gajjar, study numbers of prescriptions with diagnosis mentioned from the institute were 60% as compared to private sector, it were 89%.^[6] The prescriptions were difficult to analyse, in which diagnosis was not mentioned. Although, such prescriptions were evaluated on the basis of symptoms and signs recorded.

In our study, the average number of drugs per prescription was 2.27 in public sector and 3.36 in private sector. The difference between two groups was highly significant. Our figures are less as compared to 3.52 in service sector and 5.05 in private sector reported in Ansari et al study in Allahabad.^[7] In Taiwanese study, it was 4.3.^[8] The prescriptions of the lesser number of drugs in our study is appreciated as it is associated with lesser risk of drug interactions and error of prescribing.

On other hand study published by Shewade and Pradhan (1998), average number of drugs per prescription was 2.9 and 2.1 respectively for the prescription collected from retail medical stores and government teaching hospital respectively.^[9] Shankar et al (2004) reported in their study number of drugs per prescription 4.3.^[10]

However prescriptions with more than 4 drugs were 0 in public sector and 27 in private sector.

Gajjar(1999) had reported average rationality score of 19.23 and 20.83 for institute and private sector respectively.^[6] In study by Bhatnagar, they found only one third prescriptions were rational.^[14] In our study, using 30 point rationality score, average score for the public was the 25.83 as against 20.45 of private sector. Thus, public sector performing better than the private sector in terms of average rationality score as well as number of rational prescriptions. The extend of rationality of prescription has been much below that expressed in nationwide multicentric study where in 4% to 26% prescriptions have labeled as irrational.^[12]

In the present study, unnecessary drugs, unnecessary injections and irrational drugs / combinations were prescribed in significantly more number of prescriptions collected from private sector. Phadke et al (1995) had reported in their study that 47.4%, 23.8%, 10.5% and 19% prescriptions were contained unnecessary drugs, unnecessary injections, hazardous drugs and irrational drug respectively.^[5] Bhatnagar et al reported in their study 11.11% prescription from public sector and 10% prescriptions in private sector were with unnecessary injections.^[14] Irrational prescribing is common everywhere. Irrational drugs/ combinations prescribed by GPs in this study are cough mixtures containing antipyretic, antihistaminic, antitussive, expectorant, mucolytic and decongestant drugs, multivitamin and mineral preparations, analgesic combinations. Indiscriminate use of antibiotics is also seen particularly in viral conditions, diarrhoea and respiratory tract infections which would clear up on their own. Gajjar and Kohli et al also noted indiscriminate use of antibiotics, antihistaminics, NSAIDS in their studies.^[6,13]

Development and implementation of standard treatment guidelines for GPS based on essential drug concept and utilization of drugs rationally are the only answers for this vast problem.

CONCLUSION

Periodic prescription analysis should be carried out, both in the private and public sectors by independent experts. The methodology used for prescription analysis in this study can be used for same purpose. Also there is direct need for Continuing Medical Education (CME) of doctors for rational drug use. Participation in continuing education through independent journals, periodic conferences is highly recommended. There is acute need to develop Standard treatment guidelines for General Practitioners (Family Physicians). These guidelines should be made available to them and they should be encouraged to use the same.

REFERENCES

1. Gaud RS, Jain DK, Kaskhedikar SG, Chaturvedi SC, Critical evaluation of present prescribing pattern. *Indian J hosp Pharm*, 1989;26:70-72
2. Benet LZ, Principles of prescription order writing and patient compliance instructions, In: Goodman AG, Rall TW, Nies AS, Tylor P, (eds). *Goodman and Gillman's pharmacological basis of therapeutics*, 8th ed, New York: Pergamon Press Inc, 1991:1640
3. Puthawala AK, Mansuri SM, *Pharmacy Practicals for medical students*, 2nd ed, Ahmedabad, 1986:13-15
4. Budhraj RD, *Manual of Practical Pharmacy*, 2nd ed, Bombay:Popular Prakashan, 1993:6
5. Phadke Anand, Adrey Fernandes, L.Sharda, Pratibha Mane and Amar Jesani, a study of supply and use of pharmaceuticals in Satara district, a book published by Foundation for research in Community Health in June, 1995.
6. Gajjar BM, Evaluation and comparison of prescribing pattern of physicians from the institute and private sector for rational drug therapy (dissertation), Vallabh Vidhyanagar, S.P. Univ, 1999.
7. Ansari K.U., Singh S and Pandey R.C.Evaluation of prescribing pattern for rational drug therapy; *Indian J Pharmacol*; 1998;30 :43-46
8. Mohmed Y. H., Mandira das, Fatema Moonad; Drug utilization and antibiotic use in primary health care centres in Sharjah, *East Mediterr Health J*, Vol 3, Issue 3; 1997:444-45
9. Shewade D.G. and Pradhan S.C.; Auditing of prescriptions in a Government teaching hospital

and four retail medical stores in Pondicherry.
Indian J Pharmacol; 1998;30:408-410

10. Shankar PR, Kumar P, Rana MS, Partha P, Upadyay D, Dubey AK; Morbidity profile and drug utilization in sub health post in Western Nepal; Calicut medical Journal: 2004;2(4): e4
11. Bhatnagar T, Mishra C.P., Mtshra RN, Drug prescribing practices: A Household study in rural Varanasi; Indian J Prev Soc Med. Vom 34; No 1 and 2; 2003
12. Krishnangshu R, Ghosh JM, Chandhri SB, Mandal A, Prasad S; Prescription audit analysis- A study of drug prescription practices in India. Calcutta. Voluntary consumer action network, Consumer Utility and Trust Society, 1996
13. Kohli K, Kela A.K. and Mehta VV, Rational drug therapy as evaluated from student's clinical case reports, Indian J Physiol and Pharmacol; 1995: 39: 400-402.

Source of Support: Nil

Conflict of interest: None declared