

## **Evaluation of vitamins/tonics prescribing pattern in tertiary care teaching hospital and private sector**

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### **ABSTRACT**

**Background:** Rational use of drugs had been great concern by the government as well as public during the past several years. Monitoring of prescriptions studies could identify the associated problems and provide feedback to the prescribers, so as to create awareness about the irrational use of drugs. This study was conducted to evaluate the prescribing pattern of Vitamins/Tonics in government sector and private sector.

**Methods:** This prospective study was designed to obtain statistical data on the prescribing pattern of Vitamins/tonics in patients of S.V.B.P. Hospital Meerut and other associated hospital/ clinics. The total study sample size was of 614 prescriptions. Out of these 439 prescriptions were from government sector, 175 prescriptions from private sectors.

**Results:** Percentages of prescription with Vitamins/ Tonics were 35.76 and 48.57 in government and private sectors respectively and these differences are statistically significant. Percentage of drug prescribed as Vitamins/ Tonics of the total drugs was 8.68 and 10.19, in government and private sector respectively and these differences are statistically not significant. Vitamins/ Tonics were the most frequently prescribed drugs 16.52% and 17.14% in obs./ Gynae in both the sectors respectively, and least number of Vitamins/ Tonics 1.06% and 3.2% were prescribed in cardiology in both the sectors.

**Conclusions:** The study indicates a big scope for enhancing the prescribing pattern of Vitamins/Tonics and minimizing the use of irrational Vitamins/Tonics, due to the fact most of the times it's not needed, and it only put financial burden on Patients.

**Keywords:** Evaluation, Prescription, Pattern, Vitamins /tonics

### **INTRODUCTION**

Rational use of drugs had been great concern by the government as well as public during the past several years. Now-a-days the prescribing pattern is changing, and it's become simply a sign of medication with some directions of doses while not considering its rationality.<sup>1</sup> Prescribing Vitamins/Tonics has become the "in thing" in medical

practice. Many medical doctors, both in private as well as government setup prescribe irrational vitamins/tonics in view of better patient compliance. But this practice actually escalating the value of medicine and may cause poor drug compliance, which in addition magnifies the trouble, both for the prescriber as well the patient.

Monitoring of prescriptions and drugs utilization studies

could identify the associated problems and provide feedback to the prescribers, so as to create awareness about the irrational use of drugs.<sup>2</sup> Effort to reduce the number of drug related adverse events due to irrational drug prescription could result in substantial saving and, more important improved patient health.<sup>3</sup>

The study of prescribing pattern is a component of clinical audit, which seeks monitoring, assessment and necessary change in the prescribing practices of prescribers to achieve rational and cost effective medical care. The existing study takes a look and indicates a considerable scope for enhancing the prescribing pattern of medication and minimizing the misuse of vitamins/tonics. This can be facilitated by means of various interventions, techniques like enhancing feedback, prescriber education, and introduction of hospital formulary and control of institutional regulatory authorities.

## METHODS

This prospective study was designed to obtain statistical data on the prescribing pattern of Vitamins/Tonics in patients visiting either in the outpatient department or outside the hospital or clinics and also the patient admitted in the various specialties of S.V.B.P. hospital Meerut and other associated hospital/ clinics in the vicinity over a period of one year. It was tried to collect the possible record from various specialty of Medicine: Including - Cardiology, Gastroenterology, Resp. Medicine, Endocrinology, and Skin. Surgery: Including - Gen. Surgery, Ophthalmology, Otorhinolaryngology, and Orthopedics, Obstetrics and Gynecology and Pediatrics.

The data consists of photocopies of prescriptions. The total study sample size was of 614 prescriptions. Out of these 439 prescriptions were from government sector, 175 prescriptions from private sectors. The data was evaluated for the prescription format for its appropriateness and basic drug-use indicators. The prescription format consists of information.<sup>4</sup> Patient demographics :( Name/age/sex/address/profession), patient medical history: (if any), sign and symptoms or complaints diagnosis, investigations or any other remark.

Following drug-use indicators (core-indicators) were used in the study.<sup>5</sup>

- Distribution of prescriptions.
- Average number of Vitamins/Tonics per patient.
- Percentage of prescriptions contains Vitamins/Tonics.
- Percentage of prescribing frequency of Vitamins/Tonics.
- For the study of drugs prescribing pattern, each drug was counted once per patient. Prescribing indicators: (Core Indicators WHO 1993) were calculated as follows:<sup>6</sup>

1. Average number of Vitamins/Tonics per patient was

calculated by dividing the total number of Vitamins/Tonics prescribed by the number of patient surveyed.

2. Percentage of prescriptions with Vitamins/Tonics was determined by dividing the number of prescriptions with Vitamins/Tonics by total number of prescription multiplies by 100.
3. Percentage of Vitamins/Tonics prescribed was determined by dividing the number of Vitamins/Tonics prescribed by the total number of drugs prescribed, multiply by 100.

To analyze the data statistically test of significance of difference of proportion was used: by the following formulas;

$$SE = P1 - P2 / \sqrt{(P1 \times Q1 / n1) + (P2 \times Q2 / n2)}$$

Where: SE- Standard error P1 and P2 - Is % of prescription and drugs Q1 and Q2 - Is 100-P1 or P2.

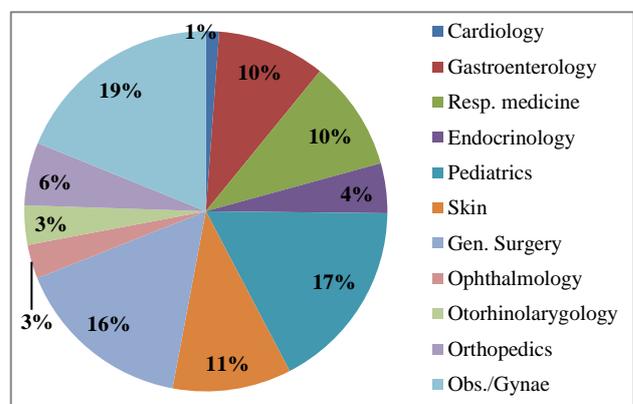
n1 and n2 are total no. of prescriptions of drug category in the respective sectors. To test the significance following criteria was used:

- If  $P1 - P2 \geq 2SE$  ( $P < 0.05$ ) - significant
- If  $P1 - P2 \geq 3SE$  ( $P < 0.01$ ) - highly significant
- If  $P1 - P2 \leq 3SE$  ( $P > 0.05$ ) - not significant

## RESULTS

Maximum of the prescriptions in both the sectors have been incomplete with respect to the prescribing layout. Patient medical history and sign/symptoms, histories of drug allergy, or drug interaction were hardly mentioned on the prescription in any department of both the sectors. Most of the prescriptions have been noted with various types of investigation.

Percentages of prescription with Vitamins/ Tonics were 35.76 and 48.57 in government and private sectors respectively (Table 2) and these differences are statistically significant (Table 3).



**Figure 1: Distribution of average number of vitamins or tonics /prescription in govt. sector.**

Percentage of drug prescribed as Vitamins/ Tonics of the total drugs was 8.68 and 10.19, in government and private sector respectively (Table 2) and these differences are statistically not significant (Table 3). Vitamins/ Tonics were the most frequently prescribed drugs 16.52% and 17.14% in obs. / Gynae in both the sectors respectively

(Table 2 and Figure 1, 2 and 3), and Least number of Vitamins/ Tonics 1.06% and 3.2% were prescribed in cardiology in both the sectors (Table 2 and Figure 1, 2 and 3). The results of study call for interventional strategies to promote rational drug therapy.

**Table 1: Prescription pattern of vitamins/tonics in government and private sectors (specialty wise).**

Departments	Total no. of prescriptions (G.S.) total	No. of drugs (G.S.)	No. of prescriptions with vitamins / tonics (G.S.)	Total no. of vitamins / tonics (G.S.)	Total No. of prescriptions (P.S.)	Total No. of drugs (P.S.)	No. of prescriptions with vitamins / tonics (P.S.)	Total no. of vitamins / tonics (P.S.)
Cardiology	36	188	02	02	11	62	2	2
Gastroenterology	31	154	13	13	15	81	7	7
Resp. medicine	35	169	15	15	16	102	8	8
Endocrinology	31	82	06	0	0	0	0	0
Paediatrics	34	161	25	25	25	131	20	22
Skin	48	165	22	22	16	66	8	8
Gen. Surgery	35	151	24	24	20	112	14	17
Ophthalmology	52	167	07	07	14	58	02	3
Otorhinolaryngology	51	183	08	08	20	92	4	4
Orthopaedics	61	266	15	15	20	113	5	5
Obs./Gyn	25	121	20	20	18	105	15	18
Total	439	1807	157	157	175	922	85	94

**Table 2: Distribution of prescription and prescribing frequency of vitamins/ tonics in various departments of government sectors (GS) and Pvt. Sectors (PS) in percentage.**

Departments	Average no. of vitamins or tonics / prescription (G.S.)	Prescription (G.S.)	Prescribing frequency (G.S.)	Average no. of vitamins or tonics/ prescription (P.S.)	Prescriptions (P.S.)	Prescribing frequency (P.S.)
Cardiology	0.05	5.55	1.06	0.18	18.18	3.2
Gastroenterology	0.41	41.93	8.44	0.46	46.66	8.64
Resp. medicine	0.42	42.85	8.87	0.50	50	7.84
Endocrinology	0.19	19.35	7.31	00	00	00
Paediatrics	0.73	73.52	15.52	.88	80	16.67
Skin	0.45	45.83	13.33	.50	50	12.12
Gen. Surgery	0.68	68.67	15.9	0.85	70	15.17
Ophthalmology	0.13	13.46	4.19	0.21	14.28	5.17
Otorhinolaryngology	0.15	15.68	4.37	0.20	20	4.34
Orthopaedics	0.24	24.59	5.63	0.25	25	4.42
Obs./Gyn	0.80	80	16.52	1.00	83	17.14
Total	0.38	35.76	8.68	.45	48.57	10.19

## DISCUSSION

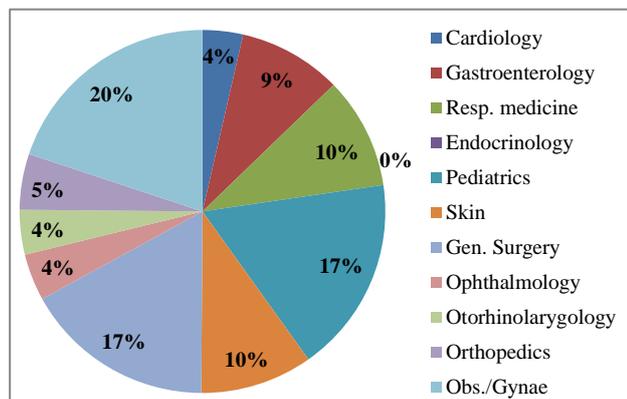
A prescription gives an insight into a prescriber's attitude towards the disease being treated and the nature of health care delivery system in the community.<sup>7</sup> The average

number of drug per prescription is a vital index of a prescription audit. It is preferable to keep the number of drugs per prescription as low as possible to minimize the risk.

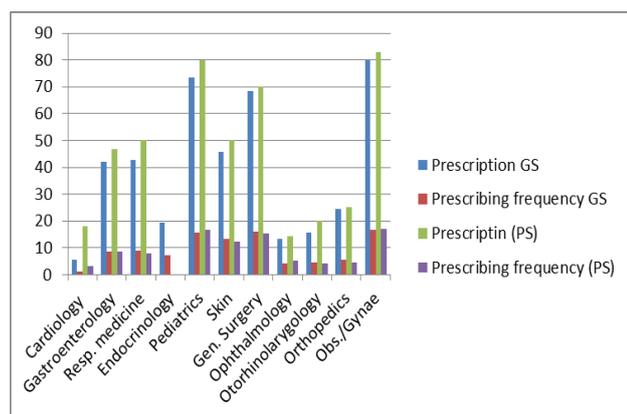
**Table 3: Statistical Significance of % of prescriptions and prescribing frequency of vitamins/tonics in govt. and private sectors.**

Sectors	Prescriptions	Prescribing frequency
Govt.	35.76	8.68
Private	48.57***	10.19*

\*P>0.05, in comparison to govt. Sector, \*\*P<0.01, in comparison to govt. Sector



**Figure 2: Distribution of average number of vitamins or tonics /prescription in private sector.**



**Figure 3: Distribution of prescription and prescribing frequency of vitamins/tonics in various departments of government sectors (GS) and pvt. sectors (PS) in percentage.**

Vitamins and tonics are some of the maximum enormously selling and expensive merchandise in India. Vitamin and tonic preparations are irrational because what is actually needed is an adequate mixed diet containing leafy vegetables. According to the Health Action International, "More than four out of every five vitamin preparations cannot be recommended; nearly three out of every five is indicated for unproven indications".<sup>8,9</sup>

Vitamins and tonics, for which there are few precise clinical indications, were utilized in many of prescriptions. These findings are just like studies from other parts of India. For example, in one study of 2400 prescriptions,

food supplements and tonics of "dubious nutritional and pharmacological value" Made up an excessive percentage of the whole drugs bill.<sup>10</sup> A study of 2953 prescriptions from public primary health centers in south India found out that patients received an average of 2.71 drugs and that vitamins,, antibiotics, analgesics and antihistamines have been the maximum usually used, accounting for more than 80% of the medication prescribed.<sup>11</sup> A study from north India also found out the indiscriminate use of analgesics, antibiotics, and vitamins.<sup>12</sup>

Irrational prescribing is unethical and has substantially reduced the standard of drug therapy, leading to widespread health hazards such as increased incidence of adverse effects, drug interactions and increases drug therapy cost. Such practices are only a financial burden on individuals and families, so the practice of over prescribing of Vitamins/Tonics needs to be discouraged.

**CONCLUSION**

The study indicates a big scope for enhancing the prescribing pattern of Vitamins/Tonics and minimizing the use of irrational Vitamins/Tonics, due to the fact most of the times it's not needed, and it only put financial burden on Patients. Rational use of Vitamins/Tonics would be facilitated by providing feedback by educators, prescribers and other interventions like introduction of hospital formulary or control by institutional regularly authorities.

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*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

**REFERENCES**

- Gaud RS, Jain DK, Kaskhedikar SG, Chaturvedi SC. Critical evaluation of present prescribing pattern. Indian J Hosp Pharma. 1989;26:70-2.
- Pradhan SC, Shewade DG, Shashindran CH, Bapna JS; Drug utilization studies. National Med J India. 1988;1:185-9.
- Edwards L, Roden DM. Principals of prescription order writing and patient compliance. In: Hardman J.G, Limbird L.E., Gillman A.G., Editor. Goodman and Gillman's The Pharmacological Basis of Therapeutics' 10<sup>th</sup> Ed. New York. McGraw Hill; 2001;1903-1915.
- Ansari KU, Singh S, Pandey RC. Evaluation of prescribing pattern of doctors for rational drug therapy. Indian JPharmacol. 1998;30:43-6.
- Kshirsagar MJ, Langade D, Patil S, Patki PS. Prescribing patterns among medical practitioners in pune, India. Bulletin- world Health Org. 1998;76:271-5.
- WHO. Action programme for essential Drugs. How to investigate drug use in health facilities. Published by WHO; 1993.

7. Laport JR. Towards a health use of pharmaceuticals. *Development dialogue.* 1985;2:48-55.
8. National Health Policy. New Delhi: Ministry of Health and Family Welfare, Government of India; [Last accessed on 2002]. Government of India; 2002.
9. Phadke A. New Delhi: Sage Publications; Drug supply and use. *Towards a rational policy in India;* 1998:110-111.
10. Greenhalgh T. Drug prescription and self-medication in India: An exploratory survey. *Soc Sci Med.* 1987;25:307-18.
11. Bapna JS, Tekur U, Gitanjali B, Shashindran CH, Pradhan SC, Thulasimani M, et al. Drug utilization at primary health care level in southern India. *Eur J Clin Pharmacol.* 1992;43:413-5.
12. Rishi RK, Sangeeta S, Surendra K, Tailang M. Prescription audit: Experience in Garhwal (Uttaranchal), India. *Trop Doct.* 2003;33:76-9.

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