



ISSN 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**Available online at: <http://www.iajps.com>

Review Article

**A DESCRIPTIVE STUDY ON PRESCRIPTION AUDIT IN
INDIA-A REVIEW****Dr. Sirisha S**, Shibi Mary Thomas*, Anand Varghese, Rama Reddy, Benny Baby,
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#33/2, ThirumenaHalli, Hegde Nagar Main Road, Bengaluru-64.**Abstract:****Object:**

The main objective of the study is to verify whether the community based prescriptions were in accordance with the prescription guideline, and to see drug utilization pattern in INDIA.

Method:

This study involved the collection of data's related to prescription guidelines and utilization of drugs in different areas of India which is reviewed and audited for drug utilization, poly-pharmacy and types of errors, physician information, patient information, drug information and for the general content of the prescription.

Result:

A total of 11,555 prescriptions analyzed during the study period. Out of those prescriptions, 6,892 (23.01%) prescriptions analyzed for generic name, more than 78% prescriptions containing the brand names. 5659 prescriptions analyzed for polypharmacy; most of the studies have shown that poly pharmacy is common. The patient details were missing in 22% of prescriptions. Prescriber's information's are missed in more than 51%. In some prescription, drug details like dose, frequency are missing in more than 32% of prescriptions. Other details such as prescription date, diagnosis, special advice, legibility and abbreviations are around 30%. 1593 prescriptions analyzed to see frequency of prescribing anti-microbials, in that 917 anti-microbials are prescribed. Rationality of prescribing drugs observed in the study of 19 prescriptions, 63.33% are found to be irrational. 33.06% prescribing pattern of fixed dose combinations are not rational. 21.90% of antibiotics in many prescriptions are irrational.

Key Words: Prescription guideline, Audit, India, Pattern, brand name.**Dr. Sirisha S**

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Please cite this article in press as Sirisha et al. *A Descriptive Study on Prescription Audit In India – A Review*, *Indo American J of Pharm Sci* 2015;2(3):641-647.

INTRODUCTION

Patient's safety is the primary focus in therapeutic medicine. WHO passed a World Health Assembly Resolution on Patients Safety and India has established the National Institute for Patients Safety (NIPS) role of "Registration of Doctors and Regulating Medical Education", and also to "Protect Patients and Guiding Doctors"¹.

Medication errors plays an important role in adverse events and ADR, also it will increase the hospital stay with high financial burden to the patients as well as the health care system. Unfortunately there is less awareness and recording of ADR and medication errors in INDIA. Very less number of physicians was following prescription guidelines.

It's very important to standardize the medical treatment at all levels of the health care delivery system to improve the quality of life. Prescription audit or medication audit seeks observation, evaluation and further recommendation on the prescribing practices of medical practitioners to make rational prescribing and cost-effective². The study was with the following objectives to see the Percentage of practitioners whether following the prescription guidelines while writing the prescription and drug utilization pattern by practitioners.

OBJECTIVE

To explore the perspectives of healthcare practitioners on current issues about medication safety in hospitals, community settings in India, and also in order to identify challenges and explore the future of medication safety practice.

- The study aimed to verify whether the community based prescriptions were in accordance with the prescription guideline.
- Study aimed to see drug utilization pattern in INDIA

METHODS AND MATERIAL

The report is based on a systematic review of the literature on prescription audit and drug utilization in INDIAN hospital setting. This study involved the collection of data's related to prescription guidelines and utilization of drugs in different areas of India which is reviewed and audited for drug utilization (rational prescribing of drugs and fixed dose combinations), poly-pharmacy and, physician information (stamp, diagnosis, signature), patient information (demographic details) drug information (strength, frequency, generic name, legible) and for the general content of the prescription.

Inclusion and exclusion criteria: Total 50 national and international articles were analysed to verify whether the standard guidelines were used to analyse the data obtained out of which 15 articles related to Indian scenario were also included in the study.

PROCEDURE AND METHODOLOGY

The study was a review based survey of all prescriptions over a two months period in 2014. Each article was analyzed for the following details

- Generic name
- Polypharmacy
- General content of prescription
 - a) Patient information
 - b) Prescribers information
 - c) Drug information
 - d) Other details
- Drug utilization

Generic name: Prescribing generic drugs maintains clarity, uniformity, ease of understanding, decreasing the cost of medical care, also avoids economical burden on society. Most percentage of practitioners follow brand names due to suggestive, catchy, ease to remember making their use common. Since medicines have more than one brand name confusion arises to pharmacist while dispensing. To avoid all these issues it's suggestive to prescribe by generic name. Finally consider patient safety convenient and effectiveness than individual ease³.

Poly pharmacy: It is the major issue leading to drug interactions and adverse drug reactions. According to guidelines, it is not possible to prescribe less than two drugs per prescription, if patient have co-morbidity⁴. It also avoids medication errors if treatment is specific to disease or symptoms.

General content of prescription:

a) Patient information: To individualize treatment plan and to avoid confusion, it's compulsory to write patient demographics like name, age, sex, allergies and contact details. It's compulsory to fill allergy box to know allergic status before prescribing the drugs. Prescription not only prescribing the drugs needs to follow up the patients for high risk medicines and co-morbidities.

b) Prescriber's information: According to guidelines it's compulsory to write physician name, sign, address, and seal and contact number in the prescription. Any doubts regarding drugs & follow-up contact directly physician. Most of the prescriptions lacking the physician's information are one of the drawback and chance to get medication errors.

c) Drug information: Drugs are available in different dosage forms and strengths, it is mandatory to write generic name of the drug in capital letters to avoid look a like drugs and dosage form frequency. Some of the prescriptions are lacking the information.

d) Other details:

Legibility: This is the most common error identifying from practitioners. Because of illegible handwriting, pharmacist will be confused and dispense look like drugs to patient and thereby leads to medication errors. Using four point rating

scale legibility can be analyzed⁴.

Abbreviations: Prescriptions should not contain any unaccepted abbreviations.

- **Drug utilization:**

Anti-microbial are most commonly prescribing drugs for minor ailments. Most common findings are improper selection and prescribing more than one antibiotic per prescription. Because of improper or over use of antibiotics leads to drug resistance⁵.

Fixed dose combinations refer to the combination of two or more drugs in a single formulation.

Irrational practices of fixed dose combinations are most common practice this may be because of lack of knowledge & unethical drug promotion by pharmaceutical companies⁶.

conducted a cross sectional stated that out of 990 prescriptions more than 90% drugs were in brand names, balasharmin S et al 2012

RESULTS AND DISCUSSIONS

A total of 36 national and international articles collected to see the prescribing patterns of drugs and utilization, from those articles based on study objective 15 articles selected analyzed (**Table 1**) in that a total of 11,555 prescriptions analyzed. Out of those prescriptions 6,892 (23.01%) prescriptions analyzed for **generic name**, more than 78 % prescriptions containing the brand names, Patel V et al, 2003 did a study on antimicrobial prescribing out of 655 prescriptions half of the antimicrobials prescribed in brand names. Pandiam unian J 2013 conducted prospective study on prescription pattern of drugs in that out of 600 prescriptions 95% prescribed by brand names. Yadav P, Kanase V et al 2008 stated that the average number of drugs used in the prescriptions was 3.28%. None of the drugs were prescribed by generic name, Pooja P et al 2013 conducted a retrospective study in Karnataka total prescriptions were 3543 from that 67.56% of drugs prescribed in brand names. Suvarna S. Rathod et al 2013 conducted a study in that out of 744 prescriptions 89.30% prescriptions are in brand names. Shaktibala dutta et al 2014 conducted a study in Uttarakhand out of 450 prescriptions none of the drugs prescribed by generic. Most percentage of practitioners follows brand names due to suggestive, catchy, ease to remember making their use common. Since medicines have more than one brand name confusion arises to pharmacist while dispensing. To avoid all these issues it's suggestive to prescribe by generic name. Finally consider patient safety convenient and effectiveness than individual ease.

2227 prescriptions analyzed for **polypharmacy**; most of the studies have shown that poly pharmacy is common, Patel V et al 2003 conducted a cross sectional study he stated that polypharmacy was common out of 990 prescriptions, Rama R et al 2013 conducted a study among 1000 prescriptions polypharmacy was common. Afroz A 2013 stated

that out of 237 prescriptions 39.24% was polypharmacy. It's very difficult to prescribe two to three drugs if patients have co morbidity conditions but if practitioners are justifying each medicine the errors can be minimized.

The **patient details** like full name, address and other details were missing in 22% of prescriptions, Sunitha J 2012 conducted a study she stated that out of 312 prescriptions more than 50% prescriptions were not containing the patients information. To avoid confusion and individualize treatment plan it is necessary to complete patient details. Prescriber's information's are missed in more than 51% prescriptions which is one of the drawback and there by chances of errors. In some prescription, **drug details** like dose, frequency are missing in more than 32% of prescriptions. To avoid confusion between the drugs and maximize the effect and minimize the errors it is necessary to write drug details clearly. **Other details** such as prescription date, diagnosis, special advice, legibility and abbreviations are around 30%. According to guidelines Prescription should not complete without writing the diagnosis, date, proper instructions and most important is an accepted abbreviation (**Table 2**).

1593 prescriptions analyzed to see frequency of prescribing **anti-microbial**, Bala sharmin S et al did a retrospective study he stated that out of 655 prescriptions 49% prescriptions had one anti-microbial then Pandiam unian J 2013 conducted a prospective study on common ailments and prescribing pattern of drugs out of 600 prescriptions 78% prescriptions containing the anti-microbial. Rama R et al in 2013 conducted a study on usage of drugs out of 1000 prescriptions 22.82% prescriptions had anti-microbial. It shows that usages of anti-microbial are very frequent; there by it may leads to drug resistance. Practitioners can select anti-microbial which are less prone to get resistance. Rationality of prescribing drugs observed Tarun Bhatnagar et al. 19 prescriptions, 63.33% are found to be irrational, which shows less number of practitioners are following standard treatment guidelines and rationality is the main concern before starting the treatment. Anjali P conducted a study on rationality in prescribing fixed dose combinations out of 279 prescriptions 33.06% prescribing pattern of fixed dose combinations are not rational; it may be due to lack of knowledge or unethical promotion (**Table 3**). 21.90 % of antibiotics in many prescriptions are **irrational**; it shows the need of antibiotic policy so that clinicians can use carefully according to patient needs. (**Table 4**)

CONCLUSION

The studies shown that majority of practitioners are not following the guidelines while writing the prescriptions and usage of drugs. There is a need to

standardize the prescribing patterns in India so that all essential information is included and will be helpful for the better patient care.

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Table 1: Summarized Review of Selected Articles

Author name	Year	State	Objective	Type of study	Duration	Sample size	Outcome
M.V.SRISHYLA	1993	Karnataka	To determine the frequency of prescribing of four commonly used groups of drugs CVS drugs, NSAIDs, CNS drugs and APD drugs.	Prospective	10 DAYS	2545	2545 prescriptions for 5534 drugs passed through pharmacy. The frequency of prescribing of NSAIDs, CNS drugs, CVS drugs and APD drugs was 24.52% (624/2545).
Prafull M	2014	NEW DELHI	The main aim of the study is to analyse and report the prescription errors.	Randomized audit	1 month	1000 (150)	Total prescription analysed--1000, 65% were found to have a total of 1012 errors. Type B errors--22.4%, type C--9.7%, type D--69.1%. The problem can be further minimized by sensitizing the prescribers to follow prescription writing practices as per 'WHO Guidelines on Good Prescribing'
Patel V	January 2003	New Delhi	To describe the quality of prescriptions by medical practitioners, including both layout of the prescription and the type and number drugs prescribed	Cross sectional study	Seven – consecutive-day	990	Total prescriptions--990. Polypharmacy was common in more than half the prescription (52.7%). Brand names-->.90%, prescription layout and clarity of written instructions was unsatisfactory.
Bala Sharmin S	2012	Maharashtra	The choice of antimicrobial prescribing and to understand the rationality of antimicrobial usage	Retrospective	1 year	655	10 or >1 antimicrobial agent in 46% prescriptions. Cotrimoxazole was the most common antimicrobial agent prescribed. And half of the antimicrobials prescribed by brand names.
Anjali P	13 December 2012	Pune	Rationality of fixed dose combination is evaluated according to WHO Model List of Essential Drugs,	Cross sectional observational study	9 months	279	> 80% of prescribed FDCs are not in accordance with Essential Drugs List. vitamins, minerals, and anaemic preparation FDCs should be prescribed judiciously as they are not free from ADRs
Pandiamunian J	2013	Tamil nadu	To assess prescription patterns of drugs and common presenting illness and percentage of drugs prescribed in generic name by general practitioners in rural area.	Prospective observational study	3 months	600	Upper respiratory tract infection- (19.67%), acid peptic disease-(12.29%), lower respiratory tract infection -(12.29%). Maximum number of drugs prescribed-7, minimum number of drugs per prescription was 3. 78% prescription contains at least 1 antimicrobial drug. And only 5.33% of drugs prescribed by generic names.
Sunitha J	2012	Andhra Pradesh	To evaluate prescribing patterns, components of prescription and to determine the completeness of prescription written by the physician	Prospective study	3 months	312	Out of 312 prescriptions 49% - patient age written 14%--contact details are present, 66%--strength of drug 18%--prescriber's stamp, 4% missing the signature of prescriber.
Tarun B	2003	Varanasi	The aim of study is to delineate the prescribing practices and extent of rational therapy	Cross sectional study		30	Available prescriptions were 30 (13.27%) only. Injection-10% of prescriptions. 43.33% prescriptions contained at least one antibiotic; Average number of drugs was 3.07 per prescription. Overall 63.33% prescriptions were found to be irrational.
Rama R	2013	Kolhapur	This study was conducted to study drug prescription pattern in outpatient department.	Prospective, randomized observational study	3 months	1000	Analgesics (32.83%), followed by Antimicrobials (22.82%), Multivitamins (16.42%) and Antacids (9.14%). Average no. of drugs prescribed /patient was 4 and analgesics was 1 and polypharmacy is common, prescription's was lacking information like diagnosis, doctor signature.
Yadav P, Kanase V	2008	Maharashtra	Generate up to date information on drug use in the ENT outpatient service of our hospital, indications for use, and aptness of its use	Prospective observational study	4 months	102 Patients	The ENT OPD patients constituted 102 (3.42%). None of the drugs were prescribed by generic name.
Narwate B	2014	Maharashtra	Quantitative type of prescription pattern by general practitioners in identifying commonly utilized drugs	Prospective observational study	25 days	500	Maximum drugs prescribed are 6 and minimum drugs prescribed are 3. 94% of prescriptions--1 antimicrobial agent studied and one NSAID - 65% of prescriptions. Only 5% of drugs were generic names.
Raquel R,	2012	Scotland	To measure the incidence and nature of prescribing errors and explore the factors contributing to them.	Prospective study	2 weeks	1,606	Three most common types of errors were unit dose missing (29.4%), valid period missing (23.4%) and administration times missing or incorrect (9.4%). Potentially serious errors were less common (6.4%) and almost all were intercepted before they could affect patients.
Afroz A	2013	Uttar Pradesh	The prescriptions were analysed based on the objectives of the study in order to promote rational use of drugs in a population	Prospective study	2 months 15 days	237	Total prescriptions: 237, total drugs: 1001. Average number of drugs/prescription-4.22. Generic name-3.79. Drugs on EDL is only 53.25% and fixed dose combinations are 26.87% of total drugs. Percentage of information--72.57%. Complete diagnoses were written in 70.04% prescriptions. 88.61% was legible and 23% prescription was incomplete with drug details. 39.24% was polypharmacy.
Pooja P	2013	Karnataka	The objective of the study to access the average number of prescriptions Formulation being prescribed Various categories of drugs being prescribed and the category most often used in ophthalmology	Retrospective hospital based study	1 year	3543	Average number of drugs per prescriptions - 4.325 Percentage of dosage forms recommended -91% Percentage of duration therapy recorded -69% Percentage of frequency of therapy recorded - 97% Percentage of drugs prescribed by generic name -32.44% Percentage of drugs prescribed by brand name - 67.56%
Suvarna S. Rathod	2013	Maharashtra	The present study was carried out to study the injection prescription patterns in outpatients.	A cross sectional descriptive study	2 months	744	Total prescriptions-744 Injections prescribed-205 Brand names in the prescription 89.30%
Shaktibala dutta	2014	Uttarakhand	To generate baseline data and analyze various aspects of drug prescribing practices, disease pattern, which are important indicators of rational prescribing.	Prospective study	6 months	450	Total prescription: 450 Drugs prescribed: 1255 Fixed dose combination: 466 Drugs prescribed by generic: 0

Table 2: General Details of the Prescriptions

	Patient Name	Age	Sex	Contact address	Prescribers name & specialty	stamp	signature	Contact address
Total No. of Rx	1302	556	556	1454	1302	312	1546	1302
Non compliance	26%	70%	63%	95%	37%	94%	32%	49%

	Strength	Dosage form	frequency	Route	Durati on	Dos e	Prescription date	Diagn osis	Special advice	abbreviat ion	legibili ty	Generic name
Total No. of Rx	312	312	404	312	556	556	404	456	312	312	990	6892
Non compli ance	66%	3%	19%	3%	73%	73 %	6.9	48%	13%	0%	88%	77%

Table 3: Frequency of Prescribing Anti-Microbials, Antibiotics and Fixed Dose Combinations

Number of Prescriptions	Anti-microbial with Generic Name (%)	Number of Prescriptions	Containing antibiotics (%)	Total number of drugs	Number of fixed dose combination
655	301 (46)	237	11 (4.64)	4474	1013 (22.64)
600	470(780)	4474	1021(22.82)	237	97(40.92)
338	146(43.3)	4711	1032(21.90)	102	77 (75.49)
1593	917(57.5)	---	--	187	466 (41.05)
--	--	--	--	5000	1653 (33.06)

Table 4: Rationality of Prescribing Drugs

S.No	Total Number of Prescriptions	Number of Irrational Prescriptions	Percentage
1	9	4	44.44
2	10	6	60.00
3	11	9	81.82
Total	30	19	63.33