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**Preliminary study of Prescription audit for evaluation of prescribing pattern of the doctors for rational drug therapy in a newly developing Pandit Jawaharlal Nehru Govt. Medical College and Hospital Chamba –HP (Pt. JLNGMCH – Chamba- HP)**

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#### **ABSTRACT**

Prescription audit is necessary to know the art of prescription practices to improve rational pharmacotherapy. Present study is an observational study and was undertaken from August 2018 to October 2018 for which data was collected from Medical OPD. Prescribing is a technique with an expert academic pharmacological knowledge.

Irrational prescribing leads to diminished therapeutic outcome. The present study is the first preliminary one at Pandit Jawaharlal Lal Nehru Govt. Medical College and Hospital, Chamba- HP Before July 2016, it was a district hospital College. It is a hilly district and caters the need of 5 Lakh people. A total of 420 prescriptions were analyzed. These prescriptions comprised of 3000 drugs. Average drugs prescribed per patient were 7.3. male and female ratio was 40% and 60% respectively. More prescription were carried out in the age group of 51 - 60 yrs. Prescriptions in generic were only 3.65% fixed dose combination was used in 300 prescriptions and comprised of 71.4% drugs. Oral prescriptions were used maximally and intravenous medication was minimally used. Multivitamin prescriptions were observed in bulk.

#### **INTRODUCTION**

A Prescription is a written request or an order to a pharmacist by a physician, veterinarian, dentist or any other properly registered medical practitioner for medications. [1]

Prescriptions are requests for drugs or medications prescribed by legally qualified prescribers. Drugs are mainly classified into legal categories. i.e. prescription drugs or legend drugs, and non – prescription drugs or over the counter (OTC) drugs. [2]

Prescriptions are very important because they become a medico-legal document once they are signed by the legal prescribing authority and thus they are mandatory to be written completely, legibly and also free of error. [3]

Medication errors may be committed by both experienced and in-experienced professionals including pharmacists, doctors, nurses, supportive personnel (e.g. ward clerks), administrators, drugs manufacturers, patients and their caregivers and others. The occurrence of medication errors is unknown, valid comparisons of different studies on medication errors are extremely difficult because of differences in variables, measurements, populations and methods. [4]

Prescribing error is an error that occurs as a result of prescribing writing, which might result in an accidental significant reductions in the therapeutic outcome of treatment and might also increase the risk or harm. [5]

Prescribing error can be classified into two main group :a) omission errors which include those errors in which there is incomplete or missing information in the prescriptions, which are unreadable and prescriptions that do not conform to legal requirements and b) commission errors, which include incorrect or wrongly written information in the prescriptions. [6, 7]

A survey conducted in Italy found a high frequency of drug prescription was incomplete and written ambiguously, 23.9% of prescription. Were not readable and information was complete or missing in 29.9% of prescriptions. [8] Medicines play an important role in healthcare delivery, and when used properly, can help cure diseases, relieve symptoms, and alleviate patient suffering. Nonetheless, irrational use of medicines remains a major issue facing most health systems across the world [9]. The World health organization (WHO) estimates that more than half of all medicines are inappropriately prescribed, dispensed, or sold. Additionally, around 50% of patients fail to take their medicines correctly [10].

The problem of irrational medicine use is known to be worse in developing countries with weak health systems,where mechanisms for routine monitoring of medicine use are often not well developed or are at times non-existent [11]. Promoting the rational use of medicines requires effective policies as well as efficient collaboration between health professionals, patients, and entire communities. Adequate understanding regarding the relevant aspects of medicine use on the part of all stakeholders is essential to drive collaborative efforts towards addressing the problem of irrational medicine use [12, 13]. Tackling the issue of irrational medicine use is considered to be essential not only to improve healthcare delivery towards ensuring patient safety, but also to allow for optimal utilization of resources. This stems from the fact that as much as 25%–70% of overall health expenditure in developing countries is spent on medicines whereas, around 10% of health expenditure in most high-income countries is consumed by medicines [14]. In this article, we focus on summarizing basic concepts around medicine use, with the aim of providing clear and concise information for the education of health professionals, patients, policy makers, and the public.

#### **MATERIAL AND METHODS**

The study was carried out prospectively over a period of 6 months in the department of general medicine of our medical college, PTJLNGMCH, Chamba, Himachal Pradesh. The present study was carried out with the objectives of:

* Obtaining information on demographic characteristics of the patients profile in our area.
* Information on diagnosis pattern and disease pattern
* Collect information on number of drugs prescribed their prescribing patterns and calculate the mean
* Number of drugs per prescription.
* Calculate the percentage of drugs prescribed from the Essential drug list.
* Percentage of fixed dose combinations (FDCs) prescribed, the percentage of drugs prescribed by
* Generic name and the number of antibiotics prescribed.
* Calculate the percentage of prescription with complete diagnosis, legibility with signature of doctor present on the prescriptions.
* Analyze the prescriptions for basic information of patient like, name, age sex and address of the patient and completeness of prescriptions in terms of dose, strength, route, frequency, duration and dosage forms of prescribed drugs.
* These prescriptions were analyzed based on the objectives of the study.

#### **RESULTS**

Drugs were prescribed by generic names (3.65%), fixed dose combinations were in (71.40%)more than one antibiotics (7.31%) information of patients (Name, Age, Sex, Address) is written all in 100% patients 75% prescriptions were legible. Prescription terms written in terms of dose, route. Strength and dosage form. (75.61%). (Table: 1)

**Table 1: Distribution of different drugs in patients with Demography**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.NO** | **PARAMETERS** | **NO. OF PRESCRIPTION** | **%AGE** |
| 1 | Drugs prescribed by generic names | 15 | 3.65 % |
| 2 | Fixed dose combination used | 300 | 71.65 % |
| 3 | More than one antibiotic prescribed | 30 | 7.31 % |
| 4 | Information of patients written (Name ,age ,sex, address) | 410 | 100 % |
| 5 | Complete diagnosis | 300 | 75 % |
| 6 | Legibility  | 300 | 75 % |
| 7 | Complete prescription in terms of dose, route, strength frequency and dosage from  | 310 | 75.61 % |

**Table 2: Prescription Profile of different age groups**

|  |  |  |  |
| --- | --- | --- | --- |
| **SR.No** | **Age Group (Years)** | **Numbers**  | **%AGE** |
| **1** | **11-20** | **45** | **10.975 %** |
| **2** | **21-30** | **60** | **14.630 %** |
| **3** | **31-40** | **70** | **17.070 %** |
| **4** | **41-50** | **177** | **28.536 %** |
| **5** | **51-60** | **118** | **28.780 %** |
| **TOTAL** | **410** |  |  |

Drugs on EDL is 35% in 3000 drugs. Fixed dose formulations consisted of 35%oral prescriptions consisted of 90% injectables topical perspirations inhalational agents were of 15%, 0.7% and 3.2% drugs .(Table :3)

**Table 3: Formulation Profile**

|  |  |  |  |
| --- | --- | --- | --- |
| **SR.NO.** | **PARAMETERS** | **NO. OF DRUGS** | **%AGE** |
| 1 | Drugs on EDL | 1000 | 35 % |
| 2 | Fixed dose formulation  | 1100 | 35 % |
| 3 | Oral | 2200 | 90 % |
| 4 | Injectable | 400 | 15 % |
| 5 | Topical  | 20 | 0.7 % |
| 6 | Inhalation | 100 | 3.2 % |

There was a variable disease pattern. Disease of the cardiovascular system were (33.98%) followed by disease of respiratory system (24.63%)and disease of Central Nervous System (10.97%) Disease of infections of parasite disease, disease of psychiatric disease GIT disease of muscular skeletal disease emprise of 8.04% 6.34%. 4.24%, 1.94% respectively others miscellaneous diagnosis were 9.85%. (Table :4)

**Table 4: Disease & Diagnostic Pattern**

|  |  |  |  |
| --- | --- | --- | --- |
| **SR.No.** | **DISEASE** | **NO OF PRESCRIPTION** | **%AGE** |
| 1 | Disease of Cardiovascular System  | 139 | 33.98 % |
| 2 | Disease of respiratory system | 101 | 24.63 % |
| 3 | Disease of Central Nervous system | 45 | 10.97 % |
| 4 | Infection of parasite diseases | 33 | 8.04 % |
| 5 | Disease of Psychiatry  | 26 | 6.34 % |
| 6 | Disease of gastro intestinal system (GIT) | 17 | 4.24 % |
| 7 | Disease of musculo skeletal system | 8 | 1.95 % |
| 8 | Others | 40 | 9.85 % |

The most common drug groups prescribed were multivitamins, minerals and enzymes, antibiotics, cardiovascular NSAIDs + serra to peptidase, expectorant and bronchodilators followed by central nervous system. Anti parasites and antihistamines were the least choices on 1.67% both classes. (Table: 5)

**Table 5: Classes of Drugs**

|  |  |  |  |
| --- | --- | --- | --- |
| **SR.NO.** | **CLASSES OF DRUGS** | **NO. OF DRUGS** | **%AGE** |
| 1 | NSAIDs + Serratopeptidose | 300 | 10 % |
| 2 | Opioid Analgesic | 40 | 1.33 % |
| 3 | Antivascular drugs | 400 | 13.33 % |
| 4 | Antibiotics | 540 | 18 % |
| 5 | Cardiovascular | 500 | 16.67 % |
| 6 | Central Nervous System | 200 | 6.67 % |
| 7 | Hormones | 100 | 3.34 % |
| 8 | Anti parasites | 50 | 1.67 % |
| 9 | Anti Histamines | 50 | 1.67 % |
| 10 | Multivitamins. Mineral And enzymes | 560 | 18.66 % |
| 11 | Expectorant & Broncludillators  | 260 | 8.66 % |

Polypharmacia is a vital part of prescriptions. Nine and more drugs were prescribed in 38.29% Eight, Seven, Six, five drugs were prescribed in 17.56%, 14.63%, 10.73% and 6.82% of prescriptions. (Table: 6)

**Table 6: Polypharmacia in Prescriptions**

|  |  |  |  |
| --- | --- | --- | --- |
| **SR.NO.** | **NO.OF DRUGS** | **NO. OF PRESCRIPTION** | **%AGE** |
| 1 | One | 5 | 1.22 |
| 2 | Two | 8 | 1.95 |
| 3 | Three | 14 | 3.43 |
| 4 | Four | 22 | 5.36 |
| 5 | Five | 28 | 6.82 |
| 6 | Six | 44 | 10.73 |
| 7 | Seven | 60 | 14.63 |
| 8 | Eight | 72 | 17.56 |
| 9 | Nine and move | 157 | 38.29 |

#### **Discussion**

The rational use of drugs and prescriptions is to provide the evidence based medicine to the patients. Bad prescriptions habits lead to ineffective unsage and adverse drug reactions. Bad prescriptions leads to prolongation of disease and distress or harm to the patient, it adds an extra burden to the health budget.

In our study the total number of drugs in 410 prescriptions analysed were 3000. Therefore, average number is higher than the recommended limit of 2.0 [15]

Increase in the number of average drugs per prescription may increase the risk of drug interactions. It may lead to unwanted side effects and also increase the prescribing and dispensing errors. However, in certain conditions like cardiovascular problems, the patients may require more than one drug. The published seventh report of the prevention detection, evaluation and treatment of high blood pressure (JNC-Vii) guidelines also permit polypharmacy in hypertension. [16]

Drugs were prescribed by generic names in only 3.65% of cases. This figure is very low and in other studies in India, there is 73.4% reports in the usage of generic names [17]

This clearly gives us indicatation that drug companies influences our attitude by the medical representatives of these companies by undue favours. Generic prescribing reduces the chances of dispensing errors. Generic prescribing is mandatory in India as it decreases the economic burden on the patients. We should stress upon the WHO drug policy in prescribing drugs. Drug on EDL were only 35%, It is totally irrelevant with other Indian studies [18] [19 ] This is a district hospital turned to medical college so it needs time to develop prescribing drugs and prescription patterns.

Dosage forms used were mostly oral (90%).Injectables were only (15%), inhalational 3.2% and topical forms were only 0.7%. The use of injectables was high as compared to other studies. [20]

It is important not to use the injectable in OPD set up because it prevents HIV and other blood borne infections. [21] Fixed dose combinations used were in 35%. More than one antibiotic was prescribed in 7.31%. These results are acceptable as per the other studies. In our study only 7.31% received more than one antibiotic. Spurious use of antibiotic is very dangerous .Antibiotic should be judiciously prescribed. In sub therapeutic doses of antibiotic these is resistance Culture Laboratory is to be used for the use of antibiotic therapy. It is also important that one should not prescribe the antibiotics for the acute respiratory and acute gastroenteritis cases of viral orgin by antibiotics. Antibiotic policy should be framed in hospital so that the clinician can use antibiotics judiciously according to the patients needs. Basic information of patients like name, age, sex, and complete address was written in 100% of prescriptions. Complete diagnosis was written only in 75% of prescriptions. Complete prescriptions in terms of dose, route, strength, frequency and dosage forms was seen only in 75.61% It should be complete in all aspects. Legibility of prescriptions writing is important but in our study legibility is 75%. It is necessary to train the prescribers to write the prescriptions in legible form.

Polypharmacia is not encouraged because of Pharmacokinetic and Pharmacodynamic drug – drug interactions. Maximum number of prescriptions ie 38.29% had more than nine drugs per prescription various studies show the advantages and disadvantages of Polypharmacy (22) (23).

The most common disease pattern seen in patients attending department of general medicine of our hospital was multivitamins, minerals and Enzymes 18.66% followed by antibiotics 18% and Cardiovascular drugs 16.67%. Anticuver drugs comprising of PPIs and H2 blockers were prescribed in 13.33% and then are followed by NSAIDs + Serratopeptidose in 10%. Doctors should not prescribe multivitamins, minerals and enzymes unless absolutely required by the patients. They should strictly adhere and prescribe from the Essential drug list (EDL)

#### **Conclusion**

 There is immense scope of improving the prescription pattern in our newly developing Medical College. It is the need of the system to formulate and recommend the change of Prescribing Practices, In future a standard treatment guidelines like EDL and Antibiotic policy in hospital need to be formulated.

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####  **References**

1. Jennaro AR editor Remington the science and practice of pharmacy 20thed. Phildadelphia. Lippincot Williams and Wilkins; 2003.
2. Scott SA. The Prescription In: Troy DB, editor. Remington. The science and practice of Pharmacy Philadelphia: Lippincott Williams and Wilkins,. 21, 2005, 823- 1825.
3. De Vries TP, Henning RH, Hogerzeil HV, Fresle DA. In: world Health Organization, editor Guide to good prescribing: A practical Mannual Geneva: World Health Organisation (WHO/DAP/84.11); 1995, 52-55
4. Manasse HR Jr. Medication use in an imperfect world - drug misadventuring as an issue of public policy. Am J Hosp Phgarm 46, 1989, 929 – 944
5. Dean B, Barber N, Schachter M. What is a prescribing error? Qual Health care 9, 2000, 232 – 237.
6. Ansari M, Neupane D Study on determination of errors in prescription writing : A semi – electronic prespective Kathmandy University Med J 7, 2009, 238 – 241
7. Mugoyela V, Mwita S. Extent of occurance of Prescribing error? Qual Health Care 9, 2000, 232- 237
8. Calligaris L, Panzera A, Amoldo L, Londero C, Quattrin R, Troncon MG; errors and missions hospital Prescriptions: A survey of prescription writing in a hospital BMC Clin Pharmacol 13, 2009, 9 -9
9. World Health Organization. World Medicines Situation Report 2011; World Health Organization: Geneva, Switzerland, 2011.
10. World Health Organization. The World Medicines Situation; World Health Organization: Geneva, Switzerland, 2004.
11. Ofori-Asenso R, Brhlikova P, Pollock A.M, Prescribing indicators at primary health care centers withinthe WHO African region: A systematic analysis (1995–2015). BMC Public Health 16, 2016, 724.
12. Almarsdottir, A.B, Traulsen J.M, Rational use of medicines-an important issue in pharmaceutical policy Pharm. World Sci. PWS 27, 2005, 76–80.
13. Seiter A, A Practical Approach to Pharmaceutical Policy; The World Bank: Washington, DC, USA, 2010.
14. World Health Organization. Health Action International: Measuring Medicine Prices, Availability, Affordability and Price Components, World Health Organization: Geneva, Switzerland, 2, 2008.
15. WHO how to investigate drug use in health facilities: selected drug use indicators. Geneva: world health Organisation : 1993, WHO/DAP 1, 1993, 1- 87
16. Chobanian Av et al : The seventh report if the joint National Committee on Preventions, Detection Evaluation and Treatment of High Blood Pressure JAMA 289(19), 2003, 2560 – 2571
17. Keranda S, Sankhe P, Knlkarni M Patterns of Prescriptions and Drug dispensing. Indian J Pedicatric 72, 2005, 117- 121
18. Biswas NR, Jindal S, Siddiqui MM, Maini R Pattern of prescription and Drug use in ophthalmology in a tertary hospital in Delhi. Br J Clin Pharmacol 51, 2001, 267 – 269.
19. Hazra A Tripathi SK, Alam MS Prescribing and dispensing activities at the health facilities of a non - governmental Organization Nat Med J India 13, 2000, 117 – 182
20. Absdi A, Gupta S, Kansal S, Ram- gopal; Prescriptions auditing and drug utilization pattern in a tertiary care teaching hospital of western UP Int J Basic Chin Pharmacol 2012, 184 – 190
21. Hutin XIF, Hauri AM, Armstong GL use of injectons in healthcare setting world wide 2000: Literature review and regional estimates BMJ 327, 2003, 1075 – 1079.
22. Patel V, Vaidya R, Naik D, Broker P. Irrational drug use in India J. Postgrad Med 51, 2005, 9-12
23. Vengurlerkar S, Shukea P, Patidar P, Bafna R, Jain S, Prescribing patterns of Antidiabetic drugs in Indore city Hospital. Indian J. Pharm Sci 2008 70, 2008, 637-640.