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IJPBS |Volume 2| Issue 4 |OCT-DEC |2012|22-31

Research Article
Pharmaceutical Sciences

STUDY OF PRESCRIBING PATTERNS OF COMMON HEALTH PROBLEMS

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ABSTRACT

Prescribing practices are a reflection of health professional's abilities to discriminate among the various choices of drugs and determine the ones that will most benefit their patients The main objectives of the study include understanding the prescribing behaviour of physicians, evaluate average cost per prescription, educate the patients regarding their medication and health status and to promote rational use of drugs for achieving better patient outcomes The study was conducted in three outpatient clinics which include Aparna Clinic, Chaitanya Clinics, Warangal from March 2011 to May 2011 with patients of either sex attended that clinic. The prescription written by the physicians were collected and the original prescription was used for data collection. A total of 677 prescriptions were collected from three outpatient clinics. Out of 677 patients 56.6 % were males and 43.4 % were females with age ranging from 31 years to 80 years. Among 677 patients, fever/Cold/Cough was found to be more common due to climatic conditions and seasonal variations. On an average 2.46 (Mean± SD of 2.46±0.9) drugs were prescribed per prescription. The patients were also educated regarding the medication use and hypertensive and diabetic patients were educated regarding their life style modifications by providing information in the form of Patient Information leaflets. There is an ample scope of improving the prescribing pattern by keeping the number of medicines as low as possible, prescribing medicines by official names, using medicines appropriately after selecting and consciously keeping the cost of therapy low. Hence, the clinical pharmacist must be considered to be an integral part of the multidisciplinary healthcare team. They should be involved in collection and presentation of prescribing data as part of clinical audit. All attempts to enhance quality of prescribing should be encouraged as also education of patients / caretakers remains crucial.

INTRODUCTION

Prescribing practices are a reflection of health professional's abilities to discriminate among the various choices of drugs and determine the ones that will most benefit their patients [1]. Prescription writing is a science and an art, as it conveys the message from the prescriber to the patient. Prescription order is an important transaction between the physician and the patient. It is an order for a scientific medication for a person at a particular time [2]. It brings in to focus the diagnostic acumen and therapeutic proficiency of the physician with instructions for palliation or restoration of the patient's health [3]. The study of prescribing patterns is a part of medical audit and seeks to monitor, evaluate if necessary, suggest modifications in prescribing practices to make medical care rational and cost effective [4]. Appropriate drug utilization studies are important tools to evaluate whether drugs are properly utilized in terms of efficacy, safety, convenience and economic aspects at all levels in the chain of drug use [5]. Regardless of considerable improvements in the availability

and control of drugs in the hospitals, rational drug use is still a worldwide concern [6]. According to the World Health Organization (WHO) [7, 8], rational use of medicines refers to when an individual receives the right medicine, for the right indication, in the right dosage and dosing frequency for the correct duration, and at the lowest cost to them and their community. Medicine use is irrational when any or all of these conditions are not met.

DRUG UTILIZATION REVIEW

Drug utilization review (DUR) programs have been defined as structured, ongoing initiatives that interpret patterns of drug use in relation to predetermined criteria, and attempt to prevent or minimize inappropriate prescribing [9]. DUR as many synonyms including drug use review, drug use evaluation and medication use evaluation. DUR programs differ from drug utilization studies which are time limited investigations that measure drug use, but do not necessarily asses appropriateness or attempt to change practices [10]. DUR and drug utilization studies are not interventions but rather activities aimed at problem detection and quantification. They should be distinguished, therefore, from DUR programs.

DUR Studies Vs. DUR Program

DUR studies are usually one time project, not routinely conducted. They provide for only minimal feedback to the involved prescriber and, most importantly, do not include any follow up measures to ascertain whether any changes in drug therapy have occurred whereas DUR program is an intervention in the form of an authorized, structured and ongoing system for improving the quality of drug use within a given health care institution.

Definitions and domains

Drug utilization research was defined by WHO in 1977 as "*the marketing, distribution, prescription, and use of drug in a society, with special emphasis on the resulting medical, social, and economic consequences".* Since then, a number of other terms have come in to use and it is important to understand the interrelationships of the different domains.

Epidemiology has been defined as "the study of the distribution and determinants of health related states and events in the population, and the application of this study to control of health problems".

Pharmacoepidemiology applies epidemiological methods to studies of the clinical use of drugs in populations. A modern definition of Pharmacoepidemiology is "*the study of the use and effects/side-effects of drugs in large numbers of people with the purpose of supporting the rational and cost effective use of drugs in the population thereby improving health outcomes"*

Pharmacosurveilance and pharmacovigilance are terms used to refer to the monitoring of drug safety, for example, by means of spontaneous adverse-effects reporting systems, case-control and cohort studies[11].

Together, drug utilization research and Pharmacoepidemiology may provide insights in to the following aspects of drug use and drug prescribing.

Pattern of drug use: This covers the extents and profiles of drug use and the trends in drug use and cost over time.

Quality of drug use: This is determined using audits to compare actual use to national prescription guidelines or local formularies. Indices of quality of drug use may include the choice of drug (compliance with recommended assortment), drug cost (compliance with budgetary recommendations), drug dosage (awareness of inter-individual variations in dose requirements and age dependence), awareness of drug interactions and adverse drug reactions, and the proportion of patients who are aware of

or unaware of the cost and benefits of the treatment [11].

Determinants of drug use: These includes user characteristics (e.g. sociodemographic parameters and attitudes towards drugs), prescribers characteristics (e.g. specialty, education and factors influencing therapeutic decisions) and drug characteristics (e.g. therapeutic properties and affordability).

Use of Health outcomes: These are the health outcomes (i.e. the benefits and adverse effects) and the economic consequences.

The initial focus of Pharmacoepidemiology was on the safety of individual drug products (Pharmacosurveilance), but it now also includes studies of their beneficial effects. The driving force behind this development was a growing awareness that the health outcomes of drug use in the rigorous setting of randomized clinical trials are not necessarily the same as the health outcomes of drug use in everyday practice. The clinical trials needed to obtain marketing authorization for new drugs involve limited numbers of carefully selected patients, who are treated and followed-up for a relatively short time in strictly controlled conditions.

RECOMMENDED DRUG USE INDICATORS

To ensure valid, consistent and reliable identification of problems associated with use of medicines, the WHO developed a set of standardized indicators [12]. For the study of small health facilities involved in primary care, there are core and complementary indicators for the evaluation of prescribers, patients and facilities. It is influenced by factors such as availability of medicines, prescribers training and experience, health budgets, promotional activities of the pharmaceutical industry, socio–economic status, cultural factors, communication system and the interaction between these factors [13, 14]. While the WHO has formulated quantitative indicators for rational usage of medicines, the interactions enumerated above can only be evaluated from a social science perspective; hence behavioral studies are necessary to elucidate the indicator findings. The WHO has recommended 5 prescribing indicators and 3 complimentary indicators for cost evaluation [15] which are mentioned below.

WHO recommended prescribing indicators [16]

1. Average number of drugs per encounter
2. Percentage of drugs prescribed by generic name
3. Percentage of encounters with an antibiotic prescribed
4. Percentage of encounters with an injection prescribed
5. Percentage of drugs prescribed from essential drugs list or formulary

WHO recommended complementary indicators for Cost

1. Average drug cost per encounter
1. Percentage of drug costs spent on antibiotics
2. Percentage of drug costs spent on injections

TYPES OF DRUG USE INFORMATION

Different types of drug use information are required depending on the problem being evaluated. These include information about the overall drug use, or use of drug groups, individual generic compounds or specific products. The types of drug information include drug based information, problem or encounter-based information, patient information, prescriber information.

MATERIALS AND METHODS

SETTING

The prospective cross-sectional study was conducted in the outpatient departments of Aparna Hospital, Chaitanya Hospitals under the supervisions of Dr.N.Venkata Rajaiah, Professor of Medicine, Formerly Superintendent (Addl.DME), M.G.M Hospital, Dr. K. Nageshwar

Rao, MBBS, D.O. R.M.O, M.G.M Hospital, Warangal and Dr. K. Sowjanya, MBBS, D.O. M.G.M Hospital Warangal and Dr.Mihir Y.Parmar, Associate Professor and HOD, Department of Pharmacy Practice, St.Peter's Institute of Pharmaceutical Sciences Hanamkonda, Warangal. The data was collected for two months and analyzed for one month.

SAMPLE SIZE

A total of 677 prescriptions for essential hypertension were studied. Data was obtained from a prospective series of 677 patients by scrutinizing the out-patients cards and laboratory reports attending the medicine out-patients department of the hospital.

INCLUSION CRITERIA:

Patients of either sex attending outpatient department of age ≥ 31 were included in the study.

EXCLUSION CRITERIA:

Individuals who were not willing to participate in the study, who were advised hospitalization, below 31 years of age individuals, pregnant women were also excluded. A patient data collection form was specially designed for the studies which include patient details, drug details. The prescriptions written by them were collected and a copy of the original prescription was used for data collection. 677 prescriptions were analyzed for average number of Drugs per prescription, medicines prescribed by Brand/Generic names. These indicators are highly standardized in terms of their definition and facilitate the quick and reliable assessment of drug use in health care [17].Use of these indicators facilitates identification of particular drug use issues that may subsequently need to be examined in more detail [18].

STATISTICAL ANALYSIS

The results were analyzed and tabulated statistically using Chi square test and one-way ANOVA test using Graph Pad Prism 5 software. P value < 0.05* indicated as significant, < 0.01** considered significant, < 0.001*** is moderately significant, < 0.0001*** is highly significant.

RESULTS AND DISCUSSION

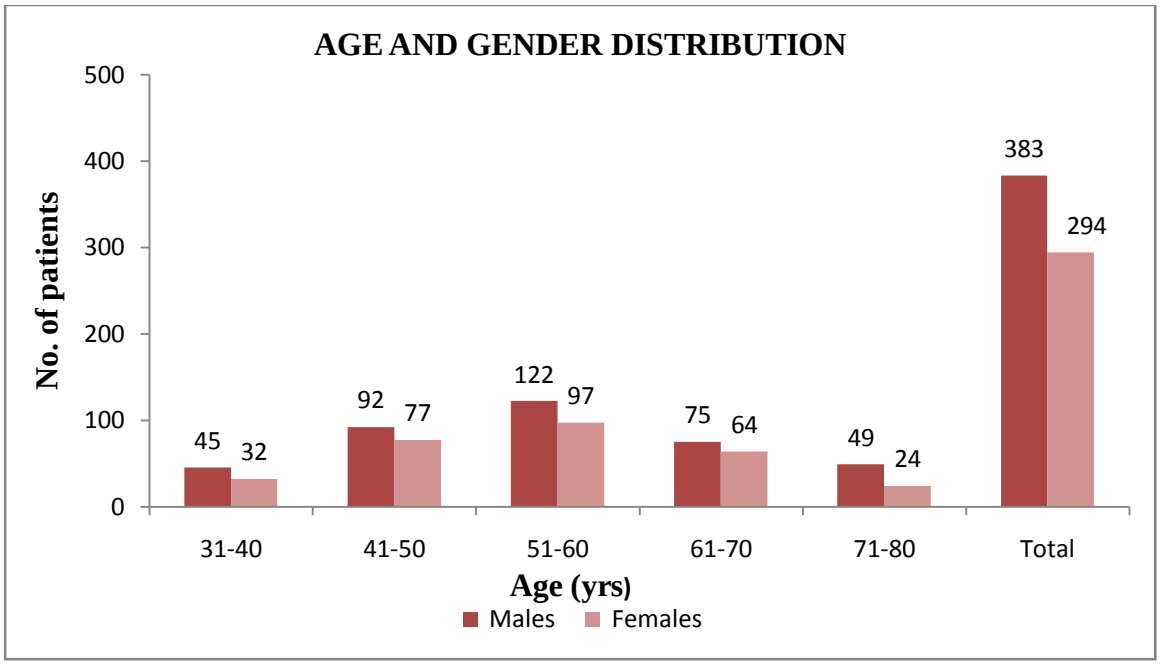
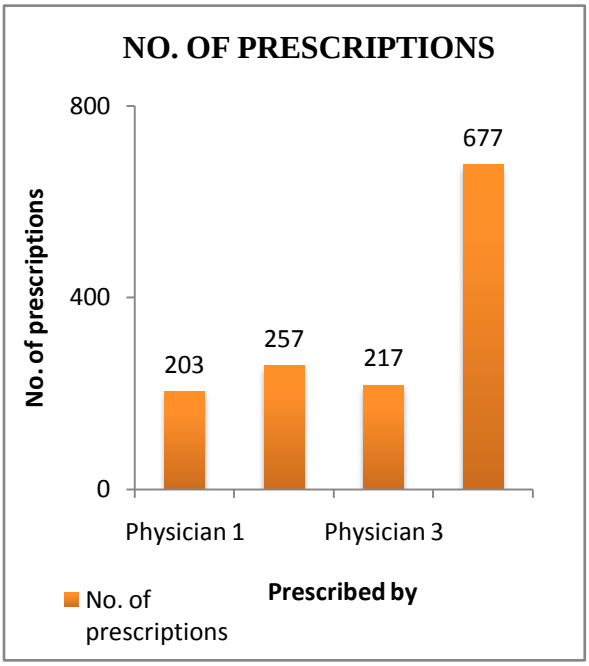


FIGURE 1: GRAPHICAL PRESENTATION OF AGE AND GENDER DISTRIBUTION OF THE PATIENTS

Out of 677 patients 56.6 % were males and 43.4 % were females with age ranging from 31 years to 80 years.



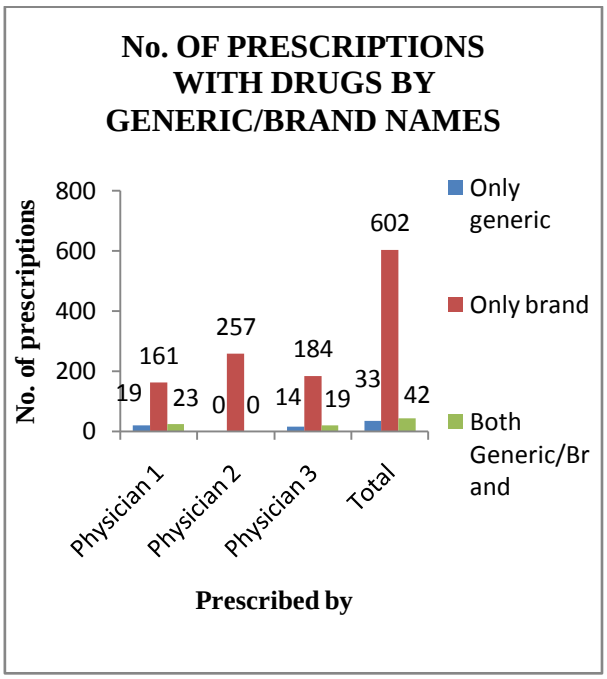


FIGURE 2: NO. OF PRESCRIPTIONS BY PRESCRIBING PHYSICIANS **FIGURE 3: NO. OF PRESCRIPTIONS THREE PHYSICIANS WITH DRUGS BY G/B NAMES**

Note: Specialist 1: Dr. K. nageshwar Rao, Specialist 2: Dr. N. Venkata Rajaiah, Specialist 3 :Dr. K. Sowjanya

The average number of drugs per prescription is an important index of prescription audit. It is preferable to keep the mean number of drugs per prescription as low as possible, since a high figure always lead to increased risk of drug interaction [19]. In the present study, the 203 prescriptions issued by specialist 1 had a mean of 2.0 (27.2 %) drugs per prescription, whereas the 257 prescriptions issued by specialist 2 had 3.2 (43%) drugs per prescription and by specialist 3 2.2 (29.8%) drugs per prescriptions out of 217 prescriptions. This suggests that there were no discernible differences between the prescribing behaviors of physicians of the outpatient department which was not statistically significant (p=0.075).

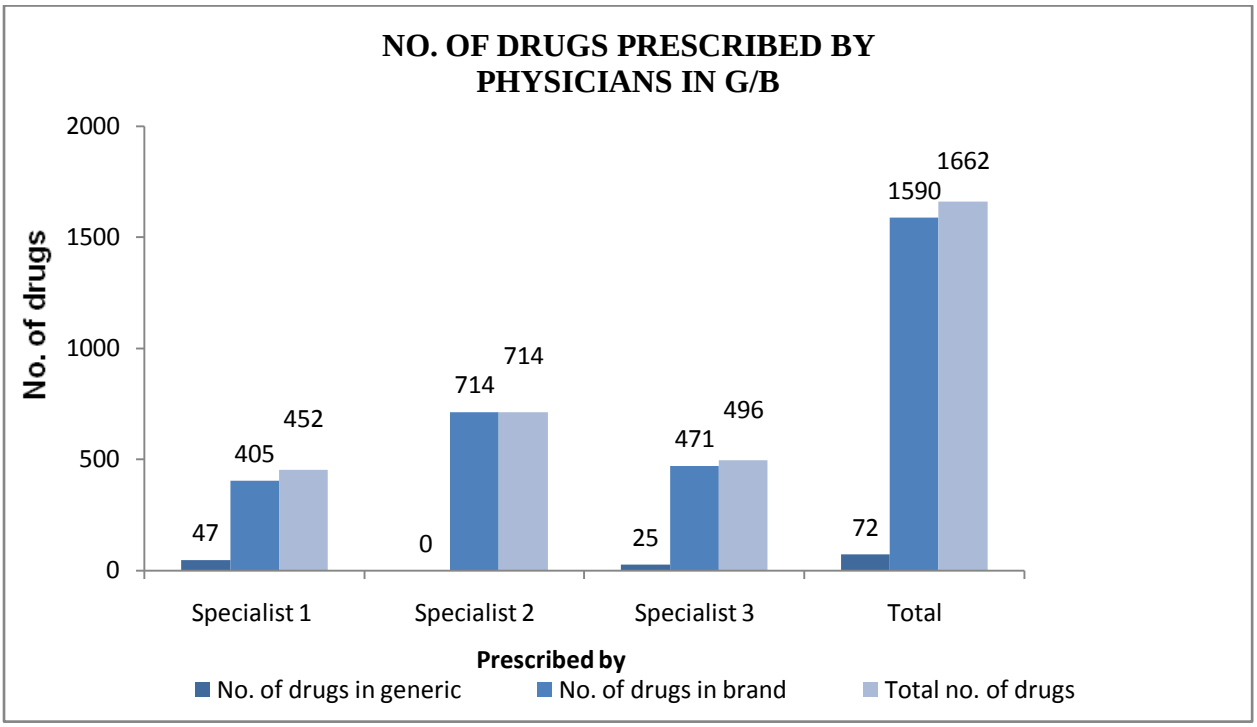


FIGURE 5: GRAPHICAL PRESENTATION OF NO. OF DRUGS PRESCRIBED BY PHYSICIANS IN G/B

The physicians in the study were prescribing the same drugs with different brand names which increased cost of prescription and increases burden on the patient. The study was conducted to identify the prescribing patterns of the physicians and also to achieve better patient outcomes by prescribing generic names. On an average 2.46 (Mean± SD of 2.46±0.9) drugs were prescribed per prescription. The result of this study conformed to WHO prescribing standards recommending a limit of 2.0[20] drugs per prescription. Prescribing by generic names is known to reduce the cost of drug treatment and rationalize drug therapy. In this study, only 72 (4.3%) out of 1662 drugs were found to be prescribed in generic names. Paracetamol, Ranitidine, Amoxicillin were the most common drugs prescribed by their generic name.

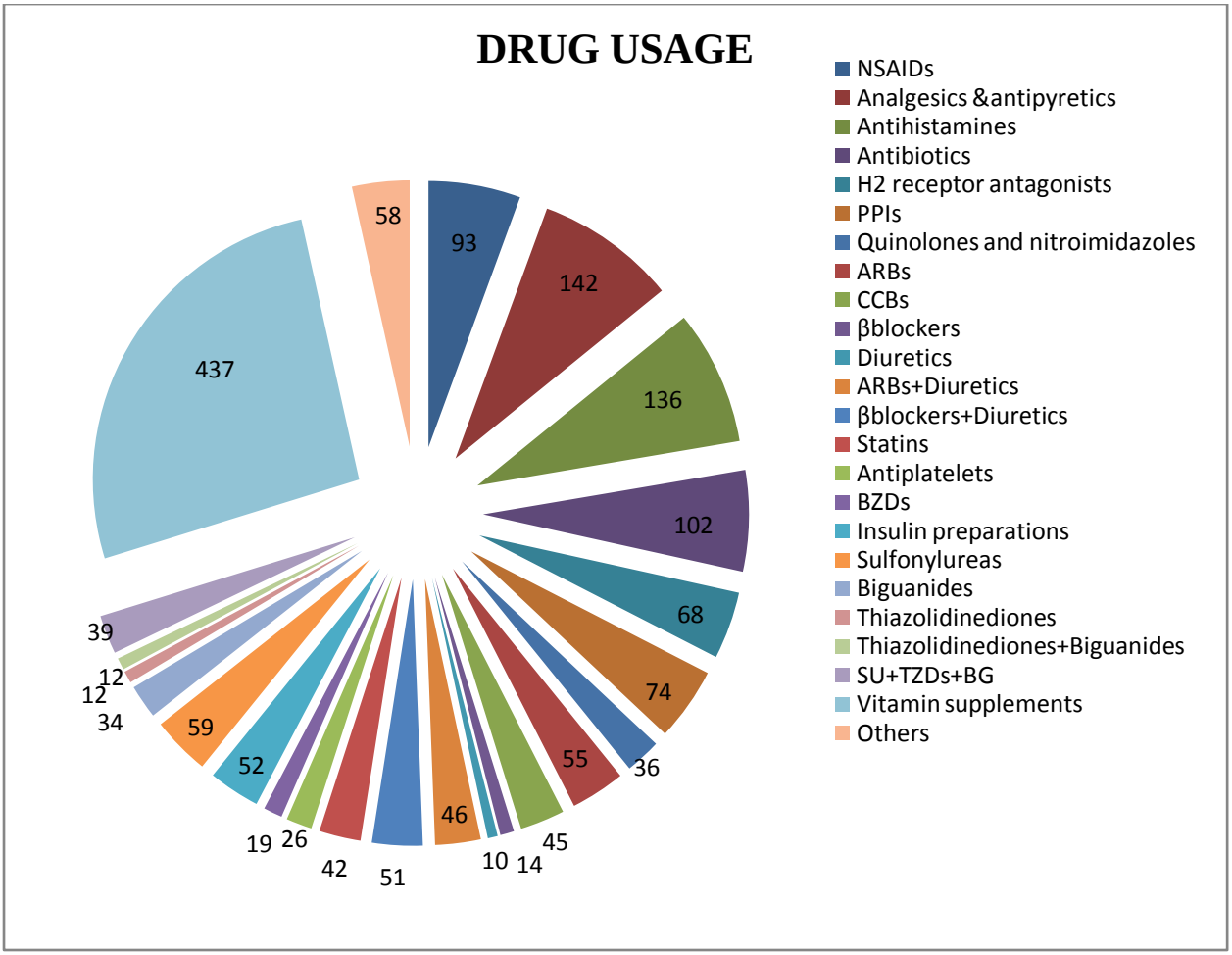


FIGURE 6: SCHEMATIC PRESENTATION OF DRUG USAGE

NSAIDs- Non Steroidal anti-inflammatory drugs, PPIs- Proton pump inhibitors,

ARBs- Angiotensin Receptor blockers, CCBs- Calcium channel blockers,

BZDs- Benzodiazepines, SU- Sulfonylureas, TZDs- Thiazolidinediones, BG- Biguanides.

Of 1662 drugs prescribed 226 (12.6%) drugs were found to be Antibiotics. Among the Antibiotics, the Penicillin group (39%) was most commonly prescribed followed by Macrolides (30.1%) and Cephalosporins (11%). From the study it was observed that 226 patients (26.2%) have encountered with antibiotics. This shows that the prescription volume of antibiotics is low which statistically significant ($p < 0.0001$) was. It must also be emphasized that the antibiotics were prescribed empirically and not through culture sensitivity reports.

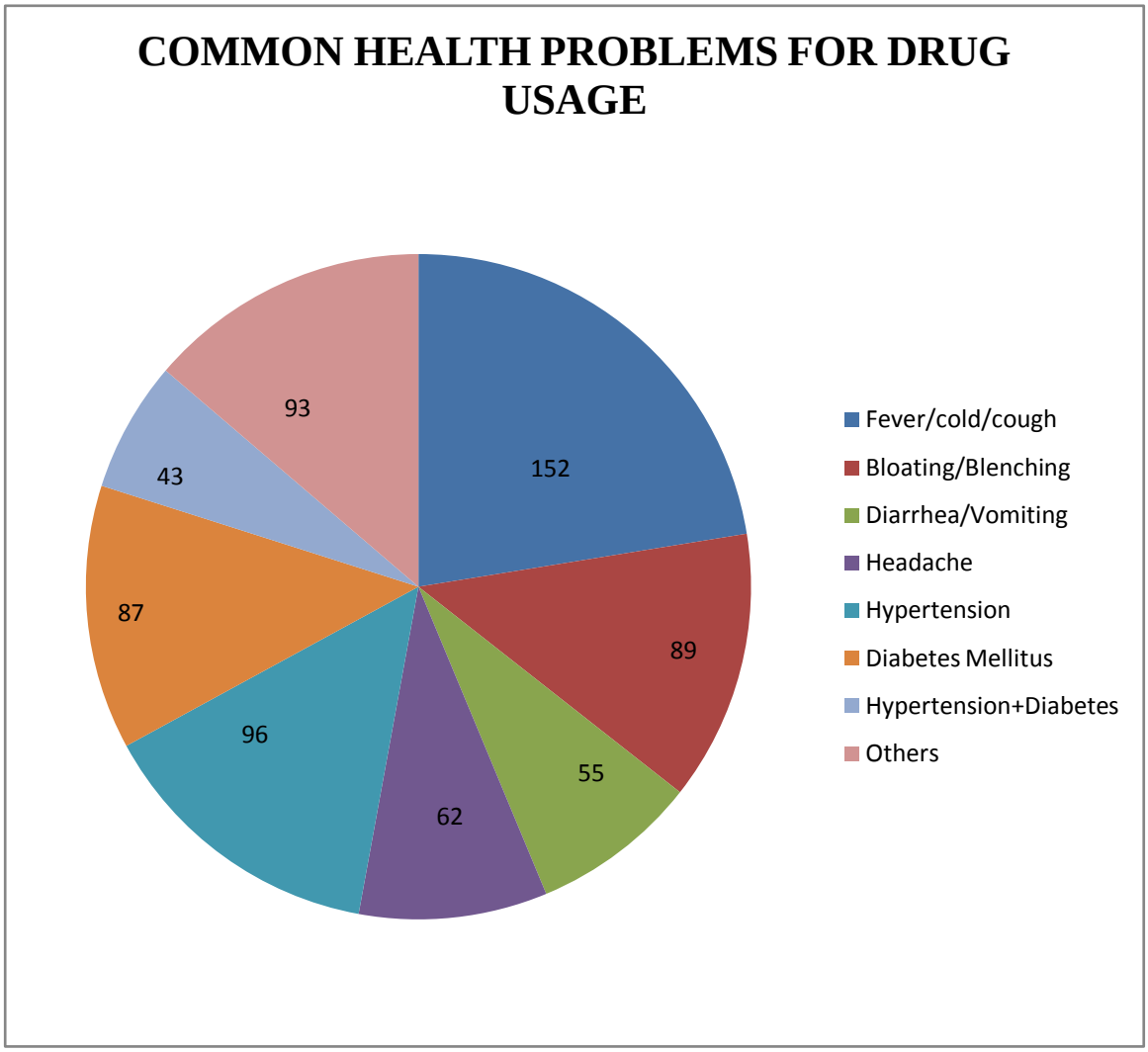


FIGURE 7: SCHEMATIC PRESENTATION OF COMMON HEALTH PROBLEMS FOR DRUG USAGE

The above figure concludes that hypertension was found to be major common health problem as elderly patients are included in the study followed by Diabetes Mellitus and so on. Of 677 patients, the common health problems found were fever, cold, cough, bloating/blenching, diarrhea/vomiting, headache, hypertension, diabetes, back pain, neck pain body pains etc. As this study was conducted between the ages of 31-80, hypertension, diabetes were also taken into consideration as these leading causes of morbidity and mortality.

CONCLUSION

This study provides important insights in to the drug use patterns in the three outpatient departments. It has helped to identify use of branded drugs by three different physicians which made more economical. To achieve the goal of rational use of medicines it is not sufficient to choose the right medicines only but also they must be employed in the most appropriate manner. There is an ample scope of improving the prescribing pattern by keeping the number of medicines as low as possible, prescribing medicines by official names, using medicines appropriately after selecting and consciously keeping the cost of therapy low.

Hence, the clinical pharmacist must be considered to be an integral part of the multidisciplinary healthcare team. They should be involved in collection and presentation of prescribing data as part of clinical audit. All attempts to enhance quality of prescribing should be encouraged as also education of patients / caretakers remains crucial.

ACKNOWLEDGEMENT

The authors are thankful to Dr.V.Prabhakar Reddy, Principal and staff members of St.Peter's Institute of pharmaceutical sciences, Hanamkonda and also to Dr.Venkata Rajaiah, Dr. K.Nageshwar Rao, and Dr. K.Sowjanya, Aparna and Chaitanya clinics, Warangal for their assistance during my project work.

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