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ANALYSIS OF PRESCRIPTION PATTERN ACCORDING TO DRUG USE INDICATORS IN OPD PATIENTS OF MEDICINE DEPARTMENT AT A TERTIARY CARE HOSPITAL

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ABSTRACT

Aim and Objectives: The present study was carried out with an objective to know drug prescribing pattern, to find out its rationality and to promote rational prescribing with the use of WHO drug prescribing indicators and some complimentary indicators.

Methods: Data were collected prospectively by scrutinizing 600 prescriptions of medicine OPD patients for a period of six months. Each prescription was evaluated according to case record form. Results: A total of 2650 drugs were prescribed during the study period among them average number of drugs per prescription was 4.41 trending towards polypharmacy. 69.05% drugs were prescribed by generic name. Use of antimicrobial agent (53.5% of encounters) was frequent, but injection use (59.99% of encounters) was very high. Maximum number (66.90%) of drugs was prescribed from national essential list of medicine (NLEM). 65.66% of prescriptions were written without diagnosis.

Conclusion: Prescription by generic name, usage of antibiotics and injections was high and majority of drugs were prescribed from NLEM, which indicates rational prescription. Minimizing the use of antibiotics after susceptibility testing and injections and confine to the National essential drug list are necessary to further improve rational use of drugs in our facility.

KEYWORDS : Prescribing pattern, prescribing indicators, Polypharmacy, Antimicrobial agent, National essential list of medicine

Introduction

A prescription is a medico legal document therefore it should be written with particular care, clarity and legibility [1]. Failing to follow this leads to irrational use of drugs and many prescription errors, its leads to many consequences like ineffective treatment, antibiotic resistance , adverse reactions, increase stay of hospitalization, economic burden and finally to mortality and morbidity [2,3]. Inappropriate medications also increases cost of treatment, roughly world population spends 35-40% of their total health budget on drugs which are used irrationally. This number increases every 4 years while GNP doubles every 16 years [4]. However, this irrational use of drug is presents at various levels right from prescriber to patients, which ultimately compromise the health care system. To overcome this problem there is an indiscriminate use of available medicines especially antimicrobial agents [5] and the rational use of medicine is a point of discussion among health sector everywhere now days.

Spectrum of disease and diseases causing organism are changing rapidly. So its necessary prescriber should prescribe evidence based cost effective rational treatment. To improve the prescribing practices, international agencies like World health organization (WHO) and the International network for the rational use of drugs (INRUD) are carrying out various studies to develop prescribing indicators [6]. So with the help of these indicators there will be constant watch on drug prescribing pattern in health care to avoid irrational prescribing. Regular assessment of drug prescribing pattern will help us to find out various factors which lead to irrational prescribing, its impact on society and health care system. Hence regular drug audit is very necessary, so that we can sensitize prescriber about it to promote rational prescribing [7]. Besides WHO drug prescribing indicators, there are some complementary indicators to evaluate prescribing practices which varies according to institute [6]. It mainly depends upon local irregularities or faults regarding prescription pattern which came across during survey.

The present study was carried out with similar intention to know drug prescribing pattern, to find out its rationality and to promote rational prescribing with the use of WHO drug prescribing indicators and some complimentary indicators.

Material and Methods

This prospective observational study was conducted in the Medicine Outpatient Department of tertiary care teaching hospital for the period 6 month. The study enrolled total 600 prescriptions of OPD patients, those having age 18 and above 18 years of either sex for data collection. The prescriptions were selected by random sampling method to avoid selection bias. Before starting the study Institutional Ethical Committee approval was obtained. To represent a sample of appropriate prescribing as per the definition of WHO, 600 prescription papers were evaluated for this study within the specified period [8]. A case record form (CRF) was prepared according to the WHO drug prescribing and complimentary indicators. Case record form includes patient's personal details and patient's treatment details. Each prescription was evaluated according to case record form.

To carry out this research we used prescribing and complimentary indicators as part of our observations. According to WHO drug use evaluation guideline, prescribing indicators used includes average number of drugs per encounter, percentage of drugs prescribed in generics, percentage of prescriptions with antibiotics, percentage of prescriptions with injections and percentage of prescribed drugs from Essential Drug List (EDL). Also the complimentary indicators used as bad handwriting, diagnosis on prescription, use of capital letters, number of new drugs and number of improper DDF.

Statistical Methods

Sample size of the study was as per the guidelines given by WHO for prescription auditing at any hospital set up. Microsoft office (excel) verson 2010 and statistical software SPSS verson 16.0 was used for collecting, storing and analyzing data in terms of average and percentages. All values double checked before calculations were done.

Results

During the period of six months, a total 600 prescriptions were analyzed. A total of 2650 drugs were prescribed, among them the average number of drugs per prescription was 4.41 with a range between 2 to 8 drugs. However 145 prescriptions (24.16%) out of 600 contain 4 or more drugs which considered as polypharmacy, (Figure 1). Drugs prescribed with generic name were around 69.05%

(1830 Drugs) and that of with brand name were 30.39% (820 Drugs). This indicates majority drugs were prescribed with generic name but still there was a big percentage regarding use of brand name, (Figure 2). As shown in figure 3, number of prescriptions with 1 or more antimicrobial agent was 321 (53.5%) and that of without any antimicrobial agent (AMA) were 279 (46.5%). Further analysis among prescriptions with AMA use shown, there was 94.26% prescription with 1 AMA, 17.56% prescription with 2 AMA use and 3.22% prescription with 3 AMA use, (Figure 4). There were 40% of prescriptions with no injectable drugs, however 51. 83% prescriptions contain 1 injectable drug and 8.16% contains 2 injectable drugs (Figure 5). Total number of drugs prescribed from national essential list of medicine was 1773 (66.90%), whereas 877 (33.10%) drugs were not included in national essential list of medicine (Figure 6). Out of 600 prescriptions, 206 (34.34%) prescriptions were found to have diagnosis written on it but remaining 394 (65.66%) prescriptions were without diagnosis (Figure 7). Lastly, 23 prescriptions i.e. around 3.83% found to have improper dose, duration or frequency. Number represents sum of all values from all three parameters.

Discussion

A prescription is a written directive by a clinician to the pharmacist / chemist to prepare and /or dispense a specific medicine for a particular patient [1]. Large number of prescriptions is inappropriate according to patients need. Almost every single prescription contains at least one antimicrobial agent. Many prescriptions contain unnecessary drugs. This all leads to irrational use of drugs [2]. This inappropriate use has serious health and economic consequences for the success of national health care system. The irrational use of drugs becomes the world wide problem than the absence of drugs information. Generally, irrational drug use are numerous and complex involving the health system, prescriber, dispenser, patient and the community. Due to such worsened condition, it is now felt that the overall drug use situation needs to be assessed, problems identified and remedial intervention strategies to be implemented so as to check dangerous trends in drug utilization in India.

The World Health Organization (WHO) suggests a set of drug use indicators that has proven useful in the investigation of drug prescribing patterns in health care facilities (WHO, 1993). Various studies have been conducted worldwide to check the prescribing pattern of prescription, moreover to check the rationality of drug prescribing. These studies are aim to see the rational use of drugs and to sensitize about the same to prescriber for the better use of health resources and drugs. Definition wise rational use of drug means, "Patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, at the lowest cost to them and their community" [9,10]. So, we planned to assess prospectively the practice of the use of generic name and other WHO prescribing parameters and some complimentary indicators, to find out its rationality and to promote rational prescribing of the drug.

The average number of drugs per prescription was found to be 4.41 which were higher when compared to other studies like those by Chandelkar UK et al [11]. His study showed that average number of drugs prescribed per encounter was 1.8 with a maximum of 6 drugs, which is within the range as compared with the standard (1.6-1.8) derived as ideal and is acceptable compared with the WHO's recommended value of 1.3-2.0 [12]. Polypharmacy, defined as the use of five or more medications, occurs in 20-40% of older people [13]. The prevalence of polypharmacy observed in 145 prescriptions (24.16%) in our study. According to the opinion of health professionals, polypharmacy is due to concomitant illness, sudden improvement of patient morbidity, preventing side effects, multiple physicians, and unclear diagnosis inadequate knowledge about appropriate indication.

In our study the majority drugs were prescribed with generic name but still there was a big percentage regarding use of brand name. It is important that drugs should be prescribed in their generic names

to avoid confusion. Although there are both advantages and disadvantages of generic prescribing, there is more to gain than to lose by this practice, especially in a teaching hospital which has a dual responsibility of providing patient service as well as medical education. Lack of knowledge about its relevance, Lack of practice, Influence pharmaceutical companies and Lack of time were found to be reasons of less use of generic name by an interview among health professionals. This helps in controlling drug costs in the health service. It also evaluates the marketing influence on the person prescribing drugs [14].

The antimicrobial agent prescribing pattern was found to be higher than prescription without any antimicrobial agent. In our study, the total percentage of encounters with antibiotics (53.5%) do not comply with the WHO standard guidelines (<30%). This indicates the importance of antimicrobial stewardship program by carrying out antimicrobial susceptibility testing which prevents the misuse of antibiotics. Now days, prescriptions with more number of injectables have been reported in various studies conducted by different authors. In this study about, 40% of prescriptions were found to be prescribed with no injectable drugs whereas 51. 83% prescriptions contain 1 injectable drug and 8.16% contains 2 injectable drugs, hence the total prescription with injectable drug was found to 59.99%. These findings were correlated with previous studies [15-17].

Essential drug list/formulary of a given country is developed to promote rational use of medicines and also help to practice the most economic prescribing in health facilities. By following essential drug list, it guarantees the treatment of the principal diseases of the population besides controlling overall cost of medications. Nevertheless, prescribing of drugs from essential drug list or formulary of India is significantly lower in our study (66.90%) compared to the one recommended by WHO (100%), which was concurrent with other studies [15,16]. The reasons could be that the prescriber's attitude not to rely on this document must critically be addressed by the health care team or the health policy makers or stakeholders. Lack of supply of the drugs in the EDL might also force the physicians to rely on the costlier drugs supplied by the pharmaceutical companies thereby increasing economic burden to the hospital and also the patient by increasing the hospital stay cost. To address this issue the government authorities must take necessary steps to ensure proper supply of drugs necessary for the hospital.

The diagnosis was mentioned in 34.34% of prescription which was higher as compared to reported by Rishi et al, [18] where it was 22.25% but lower as compared to reported by Siddarth et al, [19] where it was 97%. Dose, duration and frequency are the important parameters while prescribing the drugs. It forms the integral part of rational pharmacotherapy. Since, under dosing will not show any therapeutic effect and excess dose will lead to toxicity. Same is with the frequency and duration. In our study 23 prescriptions i.e. around 3.83% found to have improper dose, duration or frequency. Number represents sum of all values from all three parameters.

Conclusion

Interventions to rectify over prescription to be written in generic name but polypharmacy and irrational use of medicines are common problems in geriatric prescription for that prescription guideline should be formatted. Prescription by generic name, usage of antibiotics and injections was high and majority of drugs were prescribed from NLEM, which indicates rational prescription. Minimizing the use of antibiotics after susceptibility testing and injections and confine to the National essential drug list are necessary to further improve rational use of drugs in our facility.

Figures Figure 1: Average number of drugs per prescription
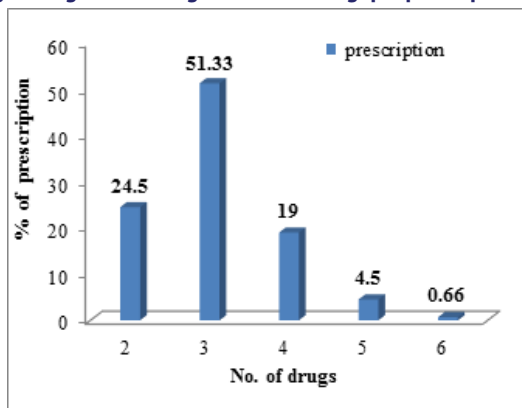

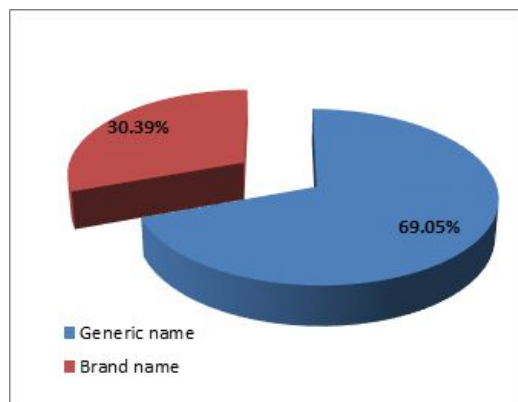**Figure 2: Percentage of drugs prescribed by generic name or Brand name**
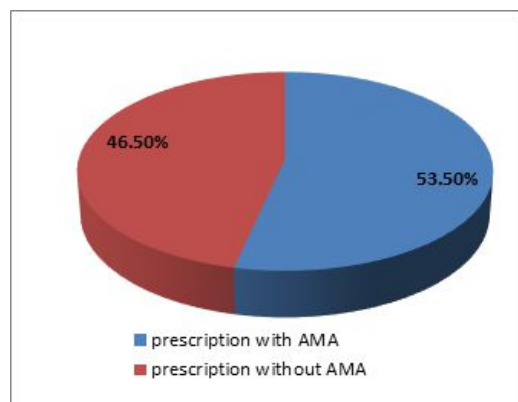

Figure 3: Use of Antimicrobial agent

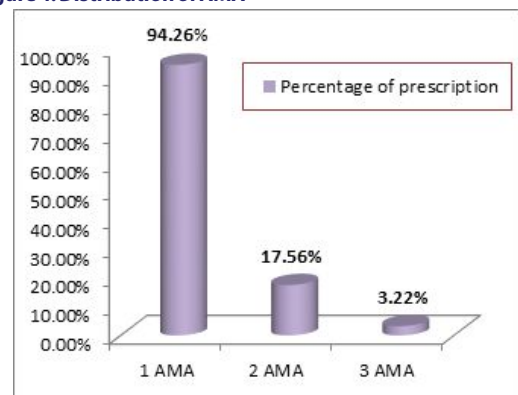
Figure 4: Distribution of AMA
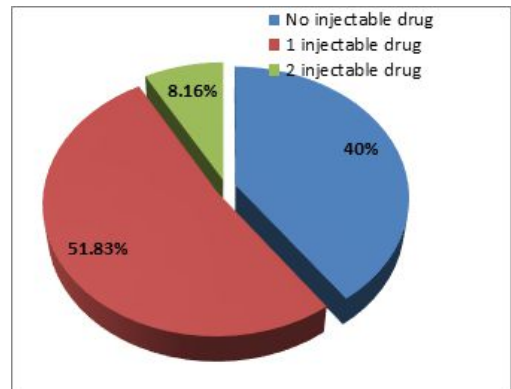

Figure 5: Use of Injectable Drugs

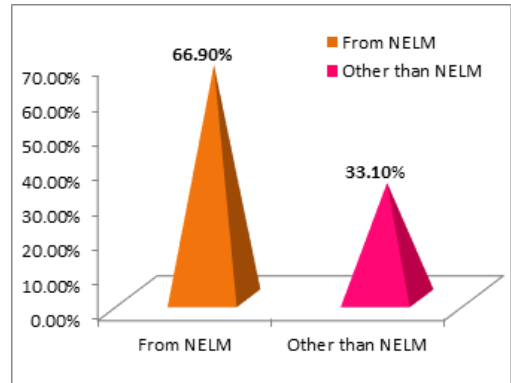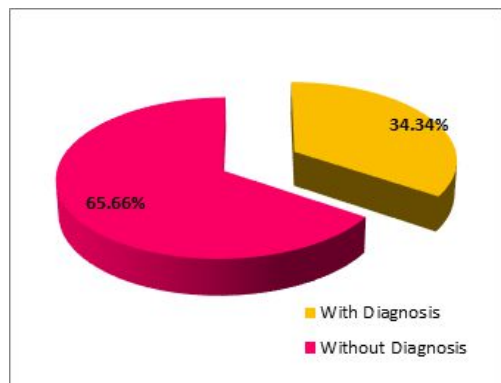**Figure 6: Drugs from national essential list of medicine (NELM)**

Figure 7: Prescription with Diagnosis

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