Utilization pattern of drugs among dermatological outpatients in a tertiary care hospital of eastern India

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Abstract

Objectives: Drug utilization study enables us to describe the pattern of prescribed drugs as well as to detect the problems in drug prescribing and use. This study was undertaken to reveal the same among dermatological outpatient practice with an objective to provide remedial messages to prescribers and to provide the baseline data to drug and health policy makers and planners.

Methods: A total of 325 prescriptions from dermatological outpatients were randomly selected and analysed using the guidelines of World Health Organization (WHO) to find the various parameters of prescribing indicators and the pattern of prescribed drugs.

Results: The average number of drugs per encounter was 2.28. Drugs prescribed by their generic name were 15.07% and those prescribed from national essential medicines list were 23.42%. Antihistamines, antifungals, corticosteroids and antibiotics were four most frequently prescribed therapeutic classes. One systemic as well as one topical medicine belonging to same therapeutic class was prescribed on about one-third of totally analyzed prescriptions. Cetrizine was the most common individually prescribed drug and fluconazole was the most commonly prescribed antifungal.

Conclusions: Polypharmacy, inclination for branded medicines and prescribing out of essential medicines list are the common problems that need proper attention of dermatological doctors to rationalize their practice. Educational and managerial interventions can minimize these problems.

Keywords: Dermatological outpatients, drug utilization, polypharmacy, prescribing indicators

1. Introduction

Drug utilization research has been defined by the World Health Organization (WHO) as "the marketing, distribution, prescription and use of drug in a society, with special emphasis on the resulting medical, social and economic consequences".[1] The descriptive part of drug utilization study describes the pattern of drug utilization and identifies the problems that arise from drug use. Such study also highlights the current approaches to facilitate the rational use of drugs. The rational use of drug requires the prescription of a well documented drug at an optimal dose, together with the correct information, at an affordable cost.[2,3] Rational prescribing is the most desired component in the drug supply-use chain that is required to ensure the rational use of drugs and a cost-effective medical care. However, irrational prescribing has been reported as a global problem.[4,5] Consequences of such bad practices are many in terms of wastage of available therapeutic resources, higher cost of treatment and adverse clinical conditions like ineffective and unsafe treatment, exacerbation or prolongation of existing illness, iatrogenic illness and increasing resistance to antimicrobials.[6] Therefore, an effort was started in 1985 in the form of a global conference of experts at Nairobi to promote rational use of drugs.[7] Prescribing indicators developed by the World Health Organization (WHO) as one of the core drug use indicators are widely used as a global standard for identification of most important problems associated with prescribing such as polypharmacy, inclination of prescribers for branded products, deviation from essential medicines list and overuse of costlier forms of treatments i.e. antibiotics and injections.[8,9] These indicators can also be used to make comparisons between regions or countries and to measure the impact of interventions.[10] The investigators can determine the parameters of prescribing indicators as well as pattern of prescribed drugs by analysis of informations contained on prescriptions.

Dermatological diseases have a high prevalence throughout the world and constitute a quarter of cases in the practice of a physician.[11,12] They can severely impair the quality of life and can be even life threatening to patients.[13] The irrational prescribing in dermatological practice thus can adversely affect the life in majority of patient population.

However, dermatological practices too are not exempted from irrational prescribing. Polypharmacy and prescribing by brand names were reported in studies conducted among dermatologic outpatients in north Palestine and western Nepal.[14,15] Similar problems were detected also in studies conducted among dermatologic outpatients in Indian subcontinent.[16,17] Therefore, it is important to rationalize such practice on a priority basis. An attempt to do so requires the description and quantification of the existing problem as a pre-requisite. However, we could not trace the data on prescribing indicators and pattern for the dermatological outpatients of our hospital to the best of our efforts. Therefore we conducted this study in the same setting with an objective to evaluate the prescribing indicators and to detect any existing problem in prescribing practice. The aim of this study also included to know the pattern of drugs prescribed in this specialty.

2. Material and Methods

This was a pharmacy based cross-sectional descriptive study conducted at a tertiary care teaching hospital located at Bhagalpur in the eastern Bihar. This study was started after getting the approval of institutional research and ethics committee. Patients attending dermatological outpatient departments were approached at the pharmacies nearby to the hospital on a predetermined day and time once in a week for their prescriptions over second four months period of 2015. Prior consent was taken from each patient before recording data from their prescription. All the important informations contained on the original prescriptions were recorded on the duplicate prescription sheets made by the investigators. The duplicate prescription sheet was made in such a way to include almost all the columns that are needed to ensure the rational prescribing. Only freshly registered patients with their prescriptions were considered to record the data randomly and prospectively irrespective of age and sex. Revisit prescriptions and prescriptions having only suggested investigations were excluded from this study. The data obtained by this method from 325 original prescriptions were then analyzed under the guidelines of WHO as mentioned in "How to investigate drug use in health facilities: Selected drug use indicators" to find out the various parameters of prescribing indicators.[8] Prescriptions were further analyzed to get the distribution of therapeutic classes of prescribed drugs and to get the prescribing frequency of individual drugs so as to know the pattern of medicines prescribing. Anti-protozoals such as Metronidazole and Tinidazole, anti-leprotics and anti-tuberculous medicines were not considered as antibiotics and fixed dose combination (FDC) products were counted as single medicine as per the norms of WHO. All the prescribed drugs were compared with those enlisted in the current national list of essential medicines to measure the deviation from the national list.[18] The number and the percentage were used to express the observed data.

3. Results

A total of 325 prescriptions belonging to same number of patients were analyzed. The total number of drugs prescribed on these prescriptions was 743. The average number of drugs per encounter was 2.28. Only 112(15.07%) drugs out of 743 were prescribed by their generic names and only 174 (23.42%) drugs were from the national list. Prescribing indicators are detailed in Table-1.

Table 1: Prescribing indicators among dermatological outpatients

| S.N.	Indicators	No.	%
1.	Average number of drugs prescribed per encounter	2.28	-
2.	Drugs Prescribed by generic name	112	15.07
3.	Encounters with antibiotics	93	28.61
4.	Encounters with injections	02	0.61
5.	Drugs prescribed from national list of essential medicines	174	23.42

Drugs were prescribed in the range of 1-6. Majority (297, 91.38%) of prescriptions were having up to three medicines and about two-third (215, 66.15%) of all prescriptions were containing not more than two medicines prescribed. There were only few (28, 8.61%) prescriptions, where more than three medicines were prescribed. Numbers of prescriptions consisting different numbers of drugs are detailed in Figure 1.

Fig. 1: Number of prescriptions containing number of prescribed drugs
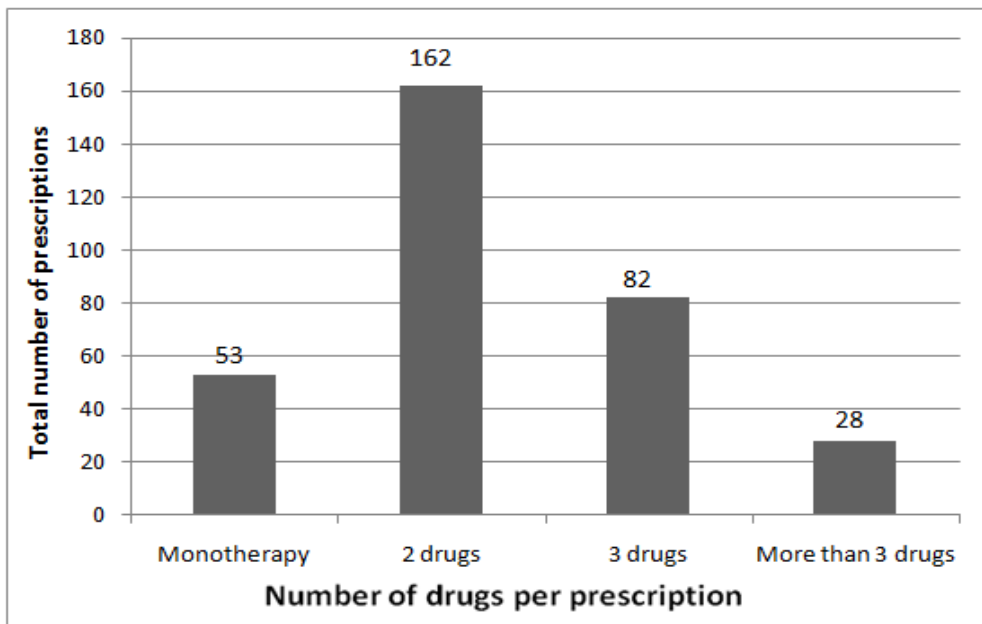
Antihistaminics, antifungals, corticosteroids and antibiotics were the most frequently prescribed therapeutic classes in their descending order. Other less common classes of prescribed drugs were vitamin B-Complex, anti-scabies agents, anti-acne agents, anthelmintics, sunscreen agents, antivirals, anaesthetic gels, antiseptics, antileprotics, anti-inflammatory etc. The details of therapeutic classes of prescribed drugs are mentioned in Figure 2.

Fig. 2: Prescribing frequency of therapeutic classes
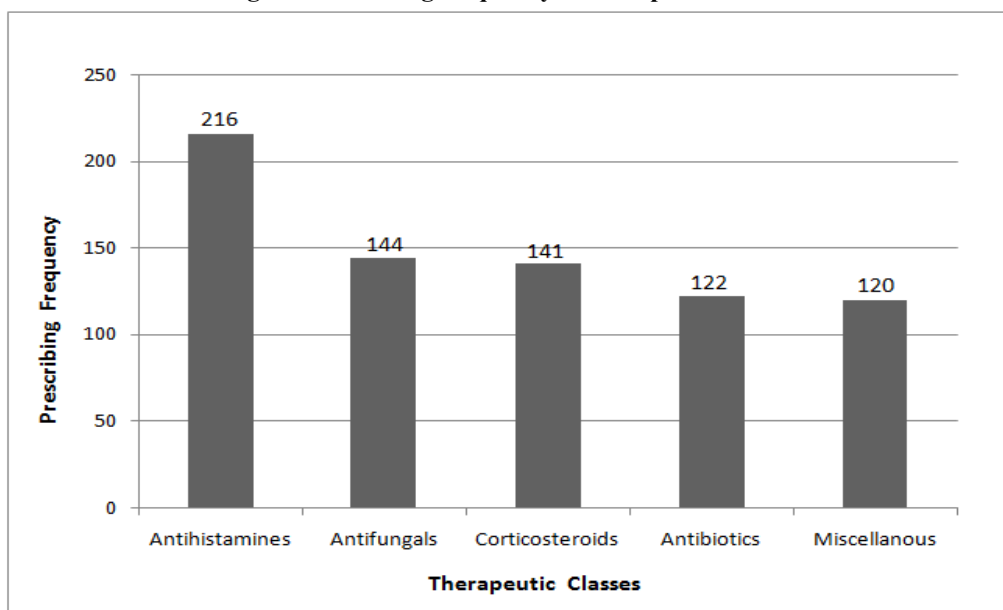
Further analysis of prescriptions revealed that 112 (34.46%) prescriptions were having one systemic as well as one topical drug belonging to same therapeutic class. There were two such different formulations of antibiotics in 48 (14.77%) prescriptions and that of antifungals in 47 (14.46%) prescriptions. Encounters with two such formulations of corticosteroids were 10 (3.08%) and those with antihistamines were 7 (2.15%). Cetrizine remarkably ranked the first among individually prescribed drugs list with prescribing frequency of 272 out of a total of 743 drugs. Fluconazole, Clotrimazole and Ketoconazole were three different individual antifungals that occupied the place among ten most frequently prescribed individual drugs. Table-2 details the top ten most frequently prescribed drugs.

Table 2: Prescribing frequency of ten most commonly prescribed individual drugs

S.N.	Name of Drug	Prescribing Frequency
1.	Cetrizine	272
2.	Ampicillin + Cloxacillin	40
3.	Framycetin	38
4.	Fluconazole	34
5.	Clotrimazole	33
6.	Ketoconazole	32
7.	Betamethasone + Salicylic acid	30
8.	Miconazole	22
9.	Prednisolone	20
10.	Cyproheptadine	17

4. Discussion

The prescriptions reflect the overall attitude of the prescribing physicians along with their knowledge for the disease process and the pharmacotherapeutic approach adopted for the disease or condition. Inadequacy for these specific areas of knowledge among prescribers can contribute to polypharmacy. Polypharmacy is regarded as a form of over-prescribing and a bad practice, as it complicates the therapeutic process by contributing to increased risk of adverse drug effects, drug-drug interactions and dispensing errors.[19] Polypharmacy also contributes to non-compliance due to increased cost of treatment as well as due to increased complexity of therapy. [20] The average number of drugs per encounter is the parameter that helps investigators to determine the attitude of prescribers regarding polypharmacy. It was found to be 3.06 and 2.42 in the study of north Palestine and western Nepal respectively.[14,15] It was reported to be 2.7, 4.1 and 3.26 in three similar studies conducted in different locations of Maharashtra (India).[16,17,21] This index was reported to be 3.36 and 2.6 in another two similar Indian studies conducted in two different locations.[22,23] These reports points towards the prevalence of polypharmacy worldwide even among dermatologic practices. This particular parameter was found to be 2.28 in our study. Thus, our observed value is less i.e. better in comparison to those reported in other similar national and international studies. Therefore, the average number of drugs per encounter found in our study suggests that the prescribers of the concerned department in our hospital are awared at least to some extent regarding the bad consequences of polypharmacy. This is also supported by the fact that majority (>90%) of prescriptions contained not more than three drugs and about 67% of prescriptions were having not more than two drugs. However, the attitude of prescribers towards polypharmacy cannot be excluded at all taking care the maximum limit of two drugs per encounter as set forth by WHO.[8,9]

Most frequently prescribed therapeutic classes in our study were antihistamines, antifungals, corticosteroids and antibiotics. This is almost in accordance with the reports of studies in western Nepal [15] and India [16,21,22]. Antifungals, antibiotics and corticosteroids were the main therapeutic categories also in the study of north Palestine.[14] The prescribing of antihistamines on such a large scale seems to be justified taking care its antiallergic as well as antipruiritic property. This is supported by the fact that allergy is one of the major causes of morbidity among patients attending dermatology department and skin allergies were found to be more common in rainy season in a report from central Nepal.[24] Skin allergies are more likely also during our study as its major portion was conducted during rainy season. Apart from that, pruiritus is a symptom that occurs in a multitude of dermatological disorders including xerosis, atopic eczema, urticaria and infections.[25] Infective diseases account for much of the morbidity in developing countries like India due to the fact that a vast majority of the population exists here under conditions of extreme poverty, inadequate medical care, poor sanitation and nutrition.[26]

Our study was conducted during the summer and monsoon seasons that favor the flare up of fungal and bacterial infections. This might have contributed significantly to more prescribing of antifungals and antibiotics in our study. Corticosteroids are also widely used in dermatological practice owing to its potent anti-inflammatory, immunosuppressive and anti-allergic actions. Thus the prescribing of these classes of drugs on a wide scale seems to be in accordance with the morbidity pattern of these developing countries and also corresponding to the probable seasonal prevalence of diseases during our study period. However, prescribing of two drugs (one systemic as well as one topical) from same therapeutic class (either antifungal or antibiotic or steroid or antihistamine) to an individual patient were also observed in about one-third prescriptions (34.46%) in our study. The rationality of such prescriptions needs to be judged in terms of the associated risk, benefit and cost of such treatment. There is also a need to investigate the exact existing morbidity pattern among dermatological outpatients of concerned hospital to justify the prescribing pattern of these drugs.

Cetrizine was the most frequently prescribed individual antihistaminic in our study. This was also the major

individual therapeutic agent in this category in other previously conducted Indian study.[22] Thus cetrizine seems to be a preferred antihistaminic and antipruiritic in dermatologic practice. This might be due to its additional antiallergic mechanisms, suitability for once daily dosing, cost-effectiveness and safety perspective. Fluconazole was the most preferred antifungal agent in our as well as studies conducted in Nepal[15] and Punjab province of India[22]. The likely reason for this preference is that the weekly dose of fluconazole provides convenient and cost-effective treatment with less risk of side effects.

In our study, 15.07% drugs were prescribed by their generic name. This is a better figure in comparison to that reported in the study conducted in western Nepal [15] and in Delhi (India) [23], where this parameter were 13% and 6.98% respectively. However, our finding in this concern is not better than those reported in other studies of India conducted in three different locations, where this index were found to be 16.6% (Mumbai) [16], 19.3% (Wardha) [21] and 24.2% (Ludhiana) [22]. Therefore, our finding in this concern can be interpreted as the inclination of prescribers for the branded drugs. Unawareness of the prescribers regarding the benefits of prescribing by generic name or the unethical promotional incentives given to the prescribers by the pharmaceutical companies to sell their products or both might be the possible reason for such deviation. Prescribing by generic name confers the least risk of dispensing errors and an ease to pharmacist for dispensing the prescribed drugs. This also confers to patients an ease in getting the drugs at the low cost in comparison to the branded products in case of price competition. Prescribers of the concerned department need their special attention to rectify this problem and to rationalize their practice.

The upper limit for the encounters with antibiotics and injections are 30% and 10% respectively as set forth by WHO.[9] These parameters were found to be 28.61% and 0.61% respectively in our study. These are under the recommended limits and to be regarded as welcome sign. Prescribers of the concerned departments deserve appreciation for their awareness against these two costlier forms of treatment.

Drugs prescribed from national list of essential medicines were found to be 23.42% in our study. This is almost comparable to the reported 23% medicines from state formulary in Delhi based Indian study.[23] However; our figure in this concern is very low and is not satisfactory. The WHO emphasizes the prescribing of medicines as much as possible from the essential medicines list or hospital formulary, as medicines are selected for this list with due regard to disease prevalence and to the evidences of efficacy, safety and the cost. Unawareness of the prescribers regarding the significance of prescribing from such list along with the unavailability of such list in the hospital seems to be the important reasons behind such deviation.

5. Conclusions

Polypharmacy, inclination for branded products and prescribing out of national essential medicines list are the problems revealed consequent to this study. Prescribers of the concerned department need their proper attention to rectify these problems and to rationalize their practice. Educational interventions aimed at rational prescribing and a multidirectional effort in the direction of ensuring availability of national list of essential medicines or hospital formulary can help significantly to minimize these problems and to maximize cost-effective medical care. Managerial intervention like restricting maximum number of drugs per prescription may also help to minimize the related problem. The major therapeutic classes constituting dermatological practice are antihistamines, antifungals, corticosteroids and antibiotics. Cetrizine is still a choice antihistamine and fluconazole is the preferred antifungal in dermatological practice. This is to be taken into consideration by health policy makers and planners.

6. Limitation of the study

This study has been carried out only for four months period. Therefore, the possibility of bias due to seasonal variation cannot be excluded. A complete whole year study could have ameliorated the seasonal bias and could have generated a more comprehensive and reliable data.

Acknowledgements

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