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Original Article

Drug Prescribing Pattern with Cost Analysis and Monitoring of Adverse Drug Reactions in Dermatology

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Abstract

Introduction: Medication problem is tragic and costly for patients and professionals alike. Rational use of the drug is defined by the WHO as "patients receive medicines appropriate to their clinical needs in doses that meet their individual requirements for an adequate period, at the lowest cost to them and their community."

Aim: This study aims to determine the prescribing pattern of drugs, their cost, and adverse reactions in the outpatient department of dermatology of a tertiary care hospital.

Materials and Methods: This prospective observation conducted at the outpatient clinic of the department of dermatology. Once the consultation by the physician is over, details in the prescriptions issued to patients were recorded in case record form. The demographic data of the patient, presenting complaints and drug reactions, were recorded.

Results: Highest number of dermatological conditions attended to was eczema. Three drug prescriptions were the most commonly prescribed pattern. Antifungals were the most commonly prescribed class of drugs among 171 prescriptions. An average number of prescriptions per encounter was 2.78, which was within the WHO standard. 48.84% of drugs were from essential drug list, which was lesser than the WHO standard (80–100%). Maximum adverse drug reaction (ADR) was possible (50%) as per the WHO causality assessment scale.

Conclusion: This study enlightened on various aspects of prescription such as number of drugs, class of drugs, cost analysis, and emphasis was also laid on monitoring of ADR for the prescription being prescribed.

Key words: Adverse drug reaction, Cost analysis, Drug prescription, WHO causality assessment scale, WHO standard of prescription

INTRODUCTION

In developing countries, skin diseases have a more significant impact on the quality of life of people; it is more so in a country like India which has a wide variation of climate, religion, customs, and socioeconomic status in different parts of the country.[3] In India, patients in the second and third decades of age group (3.7–51.17%) form the largest part of the population suffering from various skin diseases.[1] The most prevalent dermatological conditions include scabies, pyoderma, dermatitis, urticaria, fungal skin infection, acne, alopecia, and less common are eczematous disorder such as psoriasis, skin cancer, and cutaneous adverse drug reaction (ADR).[2] Most of the skin diseases are chronic, and they require lifelong treatment. Therefore, appropriate diagnosis by a physician and rational prescription of drugs based on his understanding of both risk and benefit of drugs is an important component of drug therapy.[2] Drug prescribing practice is a science and art itself. It conveys the message from the prescribing physician to the patient.[4] Medication problem is tragic and costly for patients and professionals alike.[5] Rational use of drug is defined by the WHO as "patients receive medicines appropriate to their clinical needs in doses that meet their

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own individual requirements for an adequate period of time, at the lowest cost to them and their community."[6] A recent observation is that many doctors are frequently adopting polypharmacy which has led to a steep rise in the cost of the treatment as well as adverse drug effects.[6] Prescription audit plays an important role in constituting guidelines for improving drug utilization patterns and restricting irrational prescribing. Drug utilization studies have improved medical treatments at all levels of health-care systems.[4] Henceforth, the pattern of drug use in the hospital setting needs to be monitored systematically to analyze their rationality and provide feedback to drug prescribers. This is essential to increase the therapeutic benefits and reduce the adverse effects.[7] An estimate of around 30–40% of total health budget of the third world countries is spent on drugs, some of which are useless and expensive and doubles their expenditure on drugs every 4 years while gross national product doubles every 16 years.

AIM

This study aims to determine the prescribing pattern of drugs, their cost, and adverse reactions in the outpatient department of dermatology of a tertiary care hospital.

MATERIALS AND METHODS

This prospective observation conducted at outpatient clinic of the Department of Dermatology at Sree Mookambika Institute of Medical Sciences, Kulasekharam, Kanyakumari district, Tamil Nadu.

Inclusion Criteria

The following criteria were included in the study:

i. Patients attending the dermatology outpatient department from February 2016 to January 2017
ii. Patients of both sexes above the age of 18 years
iii. Same patients attending outpatient department with a new dermatological condition during the study period.

Exclusion Criteria

The following criteria were excluded from the study:

i. Patients already recruited in the study coming for review to the outpatient department, Sikkim Manipal Institute of Medical Sciences (SMIMS)
ii. Patient with ADR after taking medications elsewhere other than the Dermatology Department, SMIMS

The study was carried out in the Dermatology Department of SMIMS, after getting approval from the Institutional Human Ethics Committee. Patients visiting the dermatology outpatient department of the institution and those satisfying the inclusion and exclusion criteria were included in the study. Written informed consent was obtained from each patient. Once the consultation by the physicians over, details in the prescriptions issued to patients were recorded in case record form. The demographic data of the patient, presenting complaints and drug reactions, were recorded. The newly diagnosed patients and patients already on treatment elsewhere who attended the Dermatology OPD in SMIMS for the 1st time were included in the study. The drug details included were dose, route, and frequency of medication. Other comorbid conditions and associated medications taken concurrently were also recorded.

RESULTS

A sample of 171 patient encounters was assessed prospectively from February 2016 to January 2017. Data were collected from prescriptions. A sample of 171 patient encounters was assessed prospectively from February 2016 to January 2017. Data were collected from prescriptions. The usage of dermatological drugs was maximum among females (n=105, 61.40%). Based on the type of illness treated, the common dermatological condition was eczema (n = 37, 21.64%) and those classified as other types of illness were paronychia onychomycosis, herpes zoster, acne vulgaris, scabies, hypermelanosis, hyperhidrosis, crack feet, melasma, pyogenic granuloma, vitiligo, candidiasis, furunculosis, folliculitis, psoriasis, and pityriasis rosea (n = 53, 30.99%). Of 171 prescriptions, three drugs per prescription were most commonly prescribed (n = 72, 42.10%) and least common was five drugs per prescription (n = 10, 5.84%) [Figure 1]. Maximum number of patients (n = 72, 42.10%) received three drugs for dermatological disorders. Most commonly prescribed monotherapy drug was tablet levocetirizine in 14 patients (8.18%). Of 171 prescriptions, the class of drugs most commonly prescribed was antifungals (27%) and least prescribed was antidandruff (1.05%) [Figure 2]. Maximum number of patients (n = 26, 26.53%) received antihistamine in a two-drug prescription pattern. Maximum number of patients (n = 56, 25.92%) received antihistamine in a three-drug prescription pattern. Maximum number of patients (n = 24, 28.57%) received antifungal in a four-drug prescription pattern. Maximum number of patients (n = 8, 17.39%) received vitamins and minerals in a five-drug prescription pattern. The most frequently prescribed antihistamine was levocetirizine (n = 51, 45.13%). The most frequently prescribed antifungal was tablet fluconazole (n = 35, 41.67%). The most frequently prescribed antibiotic was amoxicillin (n = 7, 28%) and mupirocin (n = 7, 28%). Of 171 prescription, the most frequently prescribed steroid was propysalic-NF 6 cream (n = 23, 30.26%) which is composed of clobetasol propionate and salicylic acid. The most commonly prescribed keratolytics and emollients was

liquid paraffin (n = 18, 26.87%). Of 171 prescriptions, maximum number of patients (n = 8, 38.10%) received tablet "BRISC" under vitamin and mineral class of drug. Of 171 prescriptions, maximum (34.98%) received antihistamines and least number of patients (0.38%) received antiscabies class of drugs. Of 171 prescriptions, the most common fixed drug combination prescribed as per the WHO essential drug list (EDL) was propysalic-NF 6 cream (n = 23, 35.93%) which is composed of clobetasol and salicylic acid. Based on the WHO prescribing indicators, the average number of drugs per encounter was 2.78, which was within the range limit of the WHO standard and it indicated that there was no polypharmacy. The percentage of drugs prescribed by generic name was 40.67% which was lesser than the recommended WHO standard and the percentage of drugs prescribed from EDL was 48.84 which was also lesser. The lesser percentage of prescribing drugs by generic name and lesser percentage of drugs prescribed from EDL indicates the irrational use of dermatological drugs. The percentage of encounter with antibiotic prescribed was 14.61 which was within the range of WHO standard. Hence, there was no overuse of antibiotics [Table 1].

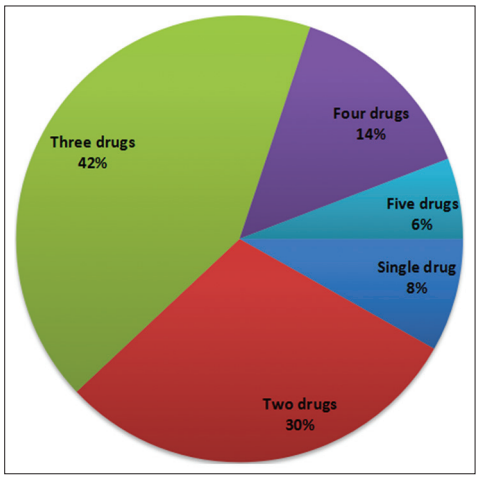

Figure 1: Distribution of encounters based on the number of drug prescribed

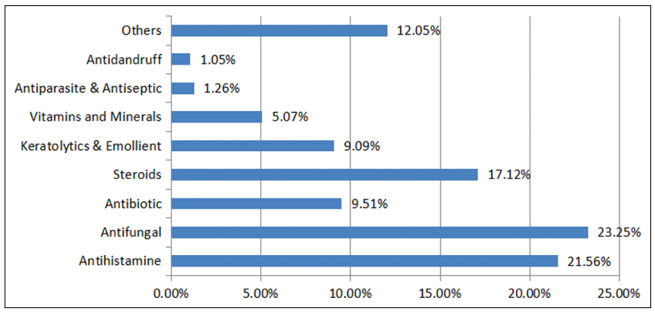

Figure 2: Distribution of various classes of dermatological drugs prescribed

DISCUSSION

In this study, 171 prescriptions were analyzed. The prevalence of dermatological drug usage was more among females (61.40%) followed by males (38.60%) which was in line with the study of Sumana and Shetti.[4] The most common age group suffering from skin diseases was 21–40 years (n = 50) which was comparable to the study done by Uppal *et al.*[7] It was found that there was a progressive decrease in the number of patients after 40 years (41–60 years=49; >60 years=22). Based on disease distribution, the present study depicted that eczema (n = 37, 21.64%) was one of the most common dermatological manifestations which were similar to a study done by Joel *et al.*[8] who stated that eczema (n = 66, 16.5%) was the most common dermatological condition in their study. The second most common fungal infection was tinea and urticaria (n = 27, 15.79%). This may be due to sweating, high humidity, and poor personal hygiene. The average number of drugs per encounter was 2.78 which is acceptable compared with the WHO standard[1,2] in a similar study done by Saleem *et al.*, the average number of drugs per encounter was 2.46 which was also in the acceptable range.[6] The low values might mean that there is constraint in the availability of drugs or prescribers have appropriate training in therapeutics. It also indicates that there was no polypharmacy. The most frequently prescribed among oral antifungals was fluconazole (41.67%) which was also similar to a study conducted by Saleem *et al.*[6] Among topical agents, miconazole gel was most frequently used. In this study, the percentage of an encounter with antibiotics was 14.61% which is low compared to the WHO standard (<40%), and this was comparable with a similar study conducted by Patil *et al.*[9] This finding suggests that antibiotics were prescribed appropriately and there was no

Table 1: Summary of prescribing indicators data

Prescribing indicators	Average or percentage	WHO standard (%)
Average number of drugs per encounter	2.78	2
Percentage of drugs prescribed by generic name	40.67	100
Percentage of drugs prescribed from EDL	48.84	80–100
Percentage of encounter with antibiotic prescribed	14.61	<40

EDL: Essential drug list

overuse. In our study, the number of patients receiving fixed-dose combination was 64 (37.42%) which was similar to a study done by Tikoo *et al.*[10] The percentage of drug prescription by generic name was 40.67% in this study which is not similar to the WHO standard (100%). In a similar study carried out by Patil *et al.*, the percentage of drugs prescribed by generic name was 31.1%, which was also lower than our finding.[9] The percentage of drugs prescribed from the WHO EDL in the study period was 48.84% which is not identical to the WHO standard (100%). A similar low percentage (44.2%) was obtained by Patil *et al.* in his study.[9] The lesser percentage of drugs prescribed by generic name and less percentage of drugs prescribed from EDL indicates the irrational use of dermatological drugs. The maximum number of prescription cost was between the range of international normalized ratio (INR) 101 and 500/- (n = 106, 61.99%) in the present study which was found to be similar in a study conducted by [Table 2] Pathak *et al.*[11] In our study, the average drug cost per prescription was INR 280/- which was high compared to the study by Narwane *et al.*[12] This high cost may be attributed to the absence of generic drugs in prescription as well as the high cost of dermatological products. This cost excluded the amount spent by the patient on other expenditures. The use of generic drugs will reduce the economic burden of the disease. In a study, Saha *et al.* showed that majority of ADR were classified as probable or possible which was similar to this study in which majority of the ADRs were possible (50%) based on the WHO-UMC causality assessment scale [Figure 3].[13] Rational prescription includes prescribing medication appropriately considering the safety profile and cost-effectiveness of the prescribed drug. Appropriate and effective monitoring of ADR is the best way to safeguard the public. In a country like India with varied socioeconomic status, it is important to have a vigilant pharmacovigilance program. Limitations of our study were socioeconomic state of the patients were not analyzed, and it was conducted at a single center. It was a cross-sectional a similar low percentage (44.2%) was obtained by Patil *et al.*[9] in his study.

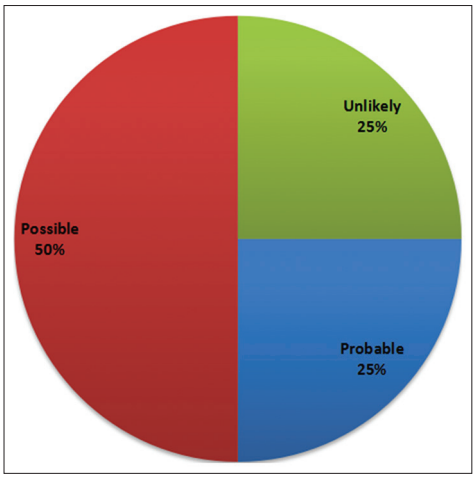

Figure 3: Causality assessment of adverse drug reactions of dermatological drugs by the WHO-UMC causality assessment scale

Table 2: Number and percentage of prescriptions based on the cost

Cost of prescription in Rs.	*n* (%)
<100	40 (23.39)
101–500	106 (61.99)
501–1000	19 (11.11)
>1000	6 (3.51)

CONCLUSION

The current study emphasized all prescribers to follow the prescription format to consider factors such as rationality of prescription, number of drug per prescription, and cost–benefit analysis. The generic prescription must be emphasized to reduce the cost of treatment by conducting continuing medical education programs. With the help of this study, various ADRs were monitored and assessed as per the WHO causality assessment scale. The only limitation of this study was a small sample size and shorter study duration.

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