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Uwase Ines Marie Aimee
Department of Pharmacy,
Annamalai University,
Chidambaram, Tamil Nadu,
India

S Ananthi
Department of Pharmacy,
Annamalai University,
Chidambaram, Tamil Nadu,
India

Mohanta GP
Department of Pharmacy,
Annamalai University,
Chidambaram, Tamil Nadu,
India

PK Kaviyarasan
Division of Dermatology
Venereology & Leprology,
RMMCH, Annamalai University,
Chidambaram, Tamil Nadu,
India

Study on drug utilization pattern in dermatology department

Uwase Ines Marie Aimee, S Ananthi, Mohanta GP and PK Kaviyarasan

Abstract
A study on drug utilization is important for educational, clinical and pharmacoeconomic purpose. It describes the pattern of drug utilization and identifies the problems that arise from drug use. This study was an observational study conducted on patients attending the dermatology department. A random once weekly data collection was done for 6 months duration. Patient related information and drug related information (like dose, dosage form, adverse drug reaction, cost minimization and patient education) was recorded on a data collection sheet. During the study 50 prescriptions of 25 (50%) males and 21 (42%) females, 2(4%) of children were analyzed. A total of 74 drugs prescribed with an average of 1.48 drugs per prescription. Most of them were having dermatitis problems (28%),followed by psoriasis (12%). The most prescribed categories agents were vitamins (39 or 78%) followed by antihistamine (31 or 62%) and antifungal (30 or 60%). Among to the antihistamine chlorpheniramine was most commonly prescribed and to the antibiotic cefotaxime was most commonly prescribed. The cost minimization analysis of skin drug was found that combination of (clobetasol propionate + salicylic) gel 100% are most expensive. This study finds that generic prescription is very low and suggests that effort must be made to encourage prescribers for generic prescribing which may have a multitude of benefits including cost effectiveness. The average number of drugs per one prescription is less than WHO standard (< 2). Antihistamines, antifungal and antibiotics dominated the prescribing pattern in this study.

Keywords: Drug utilization, dermatology, prescriptions

1. Introduction
Drug utilization is defined as the marketing, distribution, prescription and use of drugs in a society with special emphasis on the resulting medical and social consequences (WHO 2003) [1]. A study on drug utilization is important for educational, clinical and pharmacoeconomic purposes. It 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 in formation, at an affordable cost(WHO 2003) [1].
The evaluation of drug utilization is designed to describe quantitatively and qualitatively the population of users of a given drug (or class of drugs) and the conditions of use (for example, indications, duration of treatment, dosage, previous or associated treatments and compliance(Hartzema, Porta, and Tilson 1998) [2].

Pharmacoeconomic
The International Society for Pharmacoeconomics and Outcomes Research (ISPOR) defines Pharmacoeconomics as "the field of study that evaluates the behavior of individuals, firms, and markets relevant to the use of pharmaceutical products, services, and programs, and which frequently focuses on the costs (inputs) and consequences (outcomes) of that use" (ISPOR 2012) [3].
Drug costs per year are important, as they account for a substantial part of the total cost of health care –typically 10-15% in developed countries and up to30-40% in some developing countries. However, drug costs usually need to be interpreted in the context of the overall (net) costs to the health system. Drugs cost money to buy, but their use may also save costs in other areas.
There are different types of analyses that can be performed:
- Cost-minimization analysis (CMA).
- Cost-effectiveness analysis (CEA).

Correspondence
Uwase Ines Marie Aimee
Department of Pharmacy,
Annamalai University,
Chidambaram, Tamil Nadu,
India

- Cost benefits analysis (CBA).
- Cost-utility analysis (CUA).

Dermatology

Dermatology is defined as 'the branch of medicine concerned with the diagnosis and treatment of skin disorders. Dermatological diseases have a high prevalence throughout the world and constitute a quarter of cases in the practice of a physician. The clinical dermatologist must be knowledgeable about these potential hazards, and this will often require a detailed study of the multiplicity of chemicals, plants, animals, parasites, microorganisms, radiation, climatic conditions, etc., to which the skin is exposed. In many cases, the dermatologist will need to obtain exact details of what is involved in the patient's occupation and hobbies, and many dermatologists build up a considerable knowledge of the different jobs involved in their local industries. The dermatologist must also have a good knowledge of internal medicine, as most systemic diseases can occasionally affect the skin, either directly or as a result of a complication of the disease or its treatment. Drugs taken by the patient have to be considered by the dermatologist, because the unwanted effects of many drugs include provocation of rashes. This applies not only to prescribed medication, but also to over-the-counter and 'complementary' remedies (Burns *et al.*, 2004) [4].

SKIN

The skin is the largest organ in the body. It has an area of approximately 16,000 cm^2 for an adult and represents about 8% of the body weight. It acts as a barrier that protects body against UV-radiation, toxic substances, infections (Silpa *et al.*, 2013)[5]. Cells, fibers and other components make up numerous different layers that give skin a multi-layered structure. Veins, capillaries and nerves form gigantic networks inside this structure. Skin performs a wide variety of functions resulting from chemical and physical reactions inside these components (Igarashi *et al.*, 2005) [6]. Its primary function is to serve as a barrier protecting the internal organs from physical and chemical attack, invasion of pathogens and excessive water loss (Mann *et al.*, 2012) [7]

AIM: To study the drug utilization patterns in dermatology department of Rajah Muthiah medical college hospital.

Objectives

- To study the drug utilization patterns in department of dermatology.
- To note the cost of the medicine.
- To provide patient education.
- To document the adverse effects as identify.
- To identify the drug related issues like drug-drug interaction and dosing error.

Methodology

An observational study was carried out over six months (November 2017 to April 2018) in Department of Dermatology of Venereology and Leprology, Rajah Muthiah Medical College Hospital Annamalai University (RMMCH), Annamalai Nagar, Tamil Nadu, Ethical approval for the study was conducted after approval from Institutional Ethics Committee. The inform consent was taken from the participants. All patients attending outpatient clinic or admitted to Dermatology Department will be enrolled. Patients included in the study were selected based on

Inclusion and Exclusion criteria. Data was obtained from a total of 50 prescriptions which includes age and gender of the patients, the diagnosis, the drugs prescribed, route of administration and duration of treatment and the prescriptions were subjected to measuring the appropriateness of prescription. After collecting, the data were checked and analyzed with the help of Microsoft Excel (2011) and SPSS version 16. The result was shown in bar, pie and column chart and calculated the percentage of the awareness and drug utilization pattern in dermatology.

Result

A total of 50 cases were analyzed. The catchment area of our hospital is Rajah Muthiah Medical College Hospital Annamalai University (RMMCH), Annamalai Nagar, Tamil Nadu; Fig 1, 2 & 3provides the gender distribution, type of patient& age wise distribution of Inpatient and Outpatient in dermatology department, respectively. 21patients (42%) were found to be female followed by male, 25 patients (50%) and (4%) of the patients were children. The age group 42-51yrs was accounted for the highest number of 12(24%) of patients. Total number of drugs in 50 prescriptions was found to be 74. The average number of drugs per one prescription was 1.48 (Tab 1). The most different categories of drugs prescribed in the dermatology were vitamins 39 drugs (78%), antihistamine 31 drugs (62%) followed by antibiotics 30 drugs (60%) & antifungal agents 28 drugs (56%) (Fig 4). Brand name was the most prescribed with 40 drugs and Generic name was prescribed with 34 drugs (Fig 5).

(Fig 6) The most commonly prescribed drugs in dermatology. Among the total prescribed drugs Chlorpheniramine maleate30 (60%) was prescribed commonly followed by Vitamins 28 (56%), Liquid paraffin 25 (50%), Ranitidine 22 (44%), Ketoconazole 20 (40%), Erythromycin 19 (38%), Metronidazole 15 (30%), and Dexamethasone 15 (30%). (Fig 7) the percentage of prescription with antihistamine drug prescribed. Chlorpheniramine 25 (50%) was the most frequently prescribed antihistamine while the less frequently prescribed antihistamine was Hydroxyzine 5 (10%).

(Fig 8) shows the percentage of prescription with antibiotics prescribed. Cefotaxime 20 (50%) was the most frequently prescribed antibiotics followed while the less prescribed, and Ampicillin 5(10%). (Fig 9) shows the comparison pattern of various drug forms and it was found that tablets (130) are commonly prescribed followed whilst the drop (1) was reported as the less prescribed.
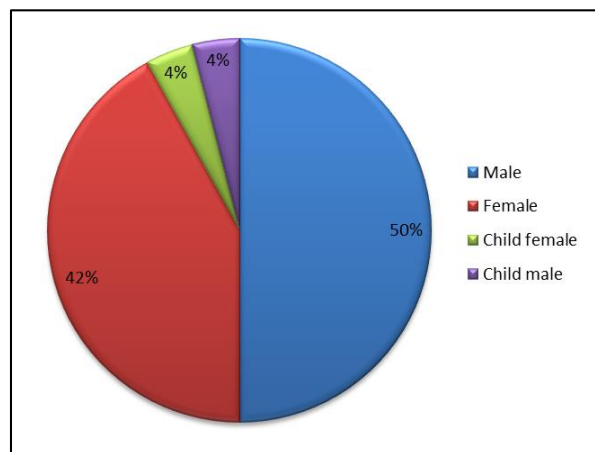

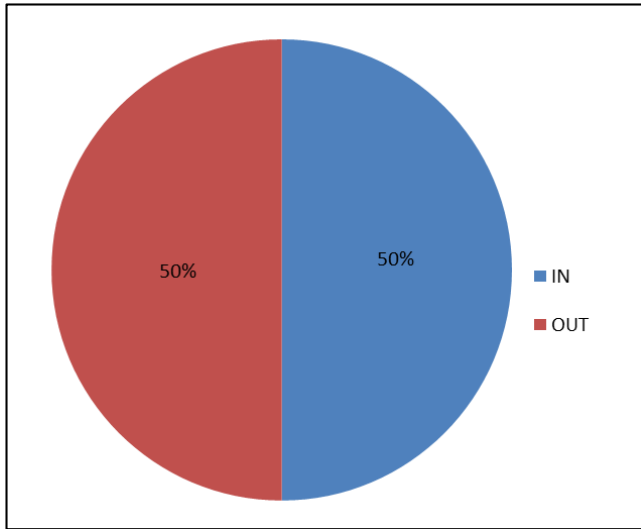
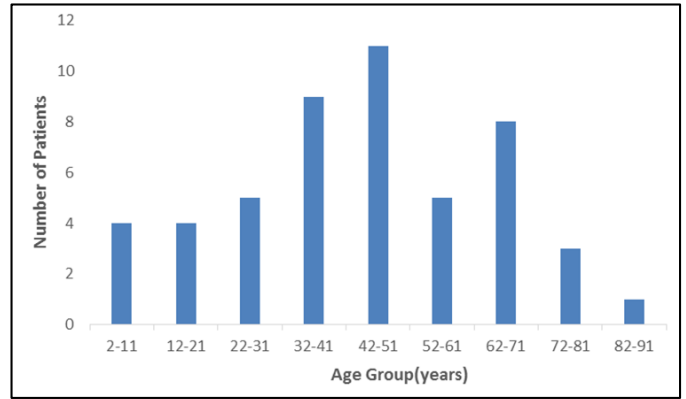**Fig 1:** Gender Wise Distribution of Skin Disease Patients

Fig 2: Types of Patients

Fig 3: Age Wise Distribution of Skin Disease

Table 1: Details of Drug Utilization Prescribing Indices

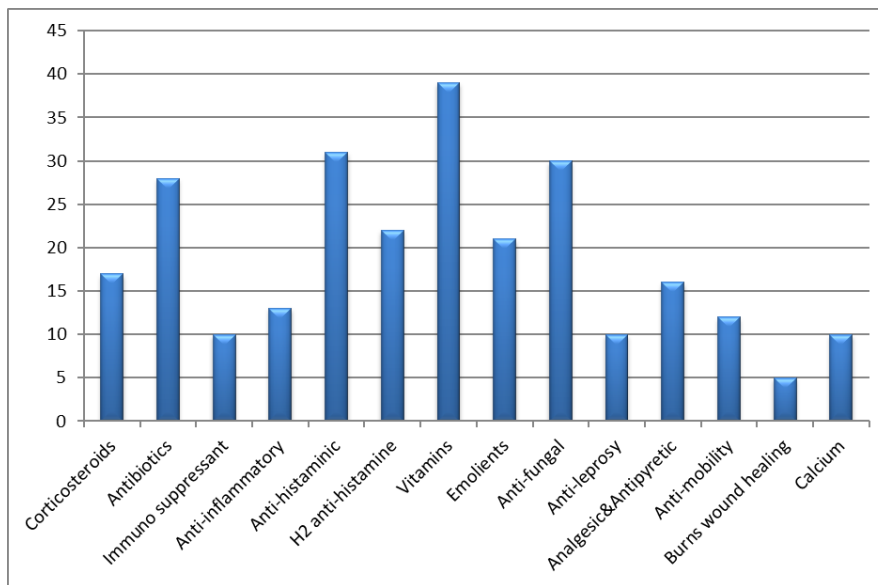| NO	Who Prescribing Indices	Value	Reference Value
1	Average number of drugs per encounter	1.48	<2

Fig 4: Showing the Different Caegories Of Drug Prescribed in Dermatology
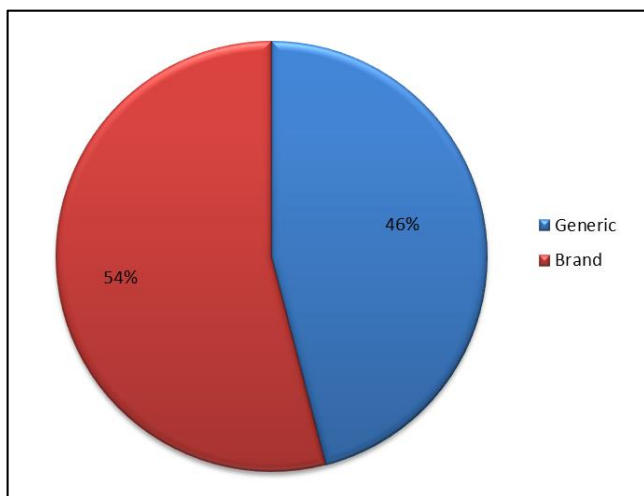

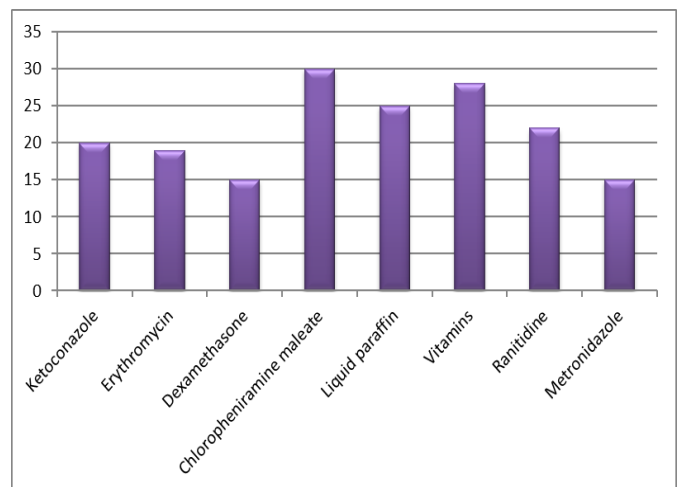**Fig 5:** Showing Brand and Generic Names Drug Prescribed
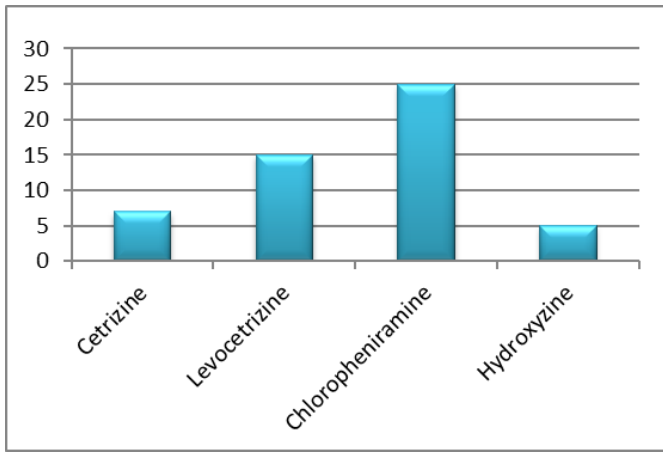

Fig 6: Showing the Most Commomnly Prescribed Drugs

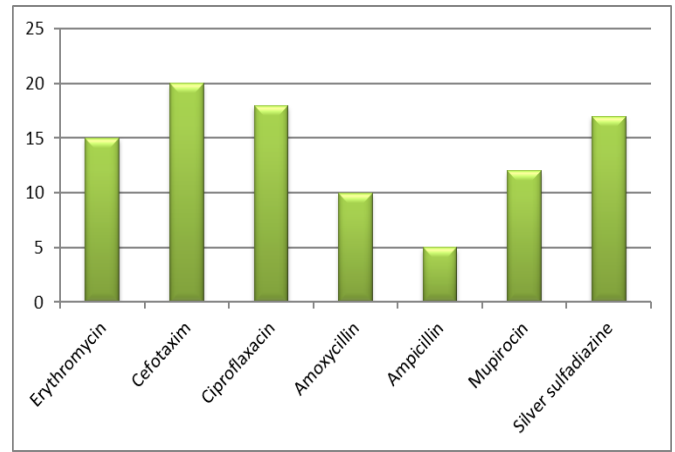**Fig 7:** Showing Anti-Histamine Drugs Prescribed

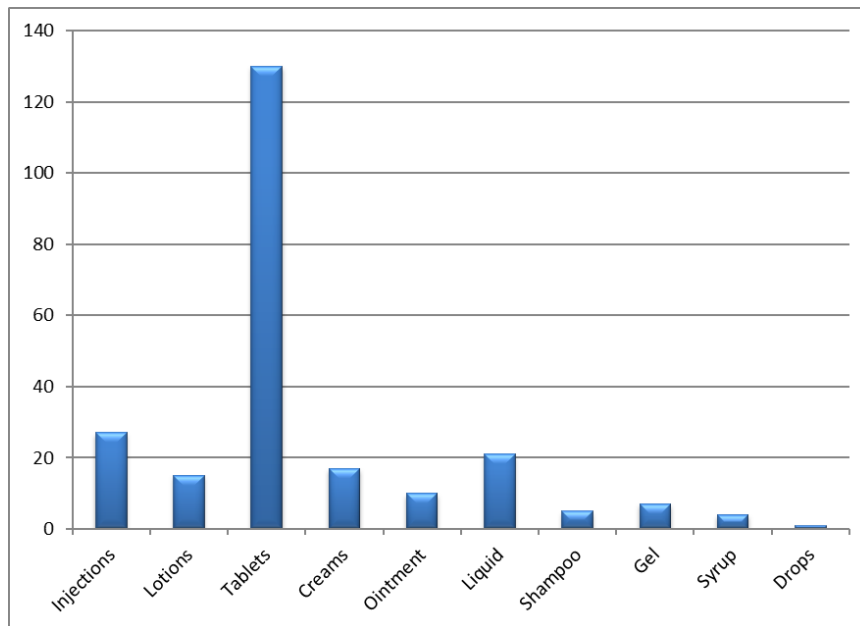**Fig 8:** Showing Antibiotic Drugs Prescribed

Fig 9: Showing Dosage Forms Prescribed

Discussion

In the present study, even though the sample size was not very large, it gave observation study of patients and the diseases for which they reported for treatment. The present study assessed the prescribing pattern and drug utilization trends in Dermatology outpatients and inpatients department at a tertiary hospital in Rajah Muthiah Medical College Hospital (RMMCH). The disease profile described in this study are most common skin diseases (Dermatitis (20%) followed by Psoriasis (10%) and Systemic Lupus Erythematous (8%). In this study of cost minimization analysis is a method of comparing two or more medicines of equal therapeutic effectiveness and safety to find out which one is the cheapest. To get the comparison of cost analysis used cost difference = (highest cost – lowest cost) and saving cost is (difference cost *100)/ the lowest cost which the result came in percentage. The result showed that the comparison of cost analysis for skin drugs and it was found that the combination of (clobetasol propionate + salicylic) gel (100%) are most expensive followed by soframycin ointment (65.09%) and triamcinolone acetenide gel (60%). The cheapest drug was the combination of (fusidic acid + mometasone) cream (0.34%). In this study the comparison of cost analysis for other drugs used and it was found that ampicillin (183.76%) are most

expensive followed by ciprofloxacin (65.62%) and cetirizine (50%). The most cheapest drug are multi-vitamins (0.34%). The study documented lower prescribing drugs by generic name (68%) reflecting inclination and preference of prescribers towards branded drugs (80%). Prescribing by generic name is essential for economical cost effective utilization of drugs. However other studies in dermatology have documented prescribing drugs by generic names from (31%) which were lower than the findings of our study. Patil et al. (2017). In this study, we found that antihistamine (62%) were the major class of drugs used in the treatment of skin diseases. most commonly used drugs followed by Anti-fungal (60%), Antibiotics (56%). Studies conducted across India have shown similar trend of high antihistaminic prescribing in dermatology department. Pathak et al. (2016) [8]. The average number of drugs per one prescription in this study was 1.48 which less than World Health Organization (WHO) standard (< 2). It is advisable to keep restraint on poly-pharmacy as it leads to risk of drug interactions, errors in dispensing and difficulty in taking dosage as per prescribed schedule. In our study, we documented that, Oral tablets were the commonest dosage forms in comparison to topical agents which was similar to Pathak et al. (2016) [9], Krishna et al. (2015) [10] and Rekha et al. (2015) [11]. Other studies have documented

topical forms commonly prescribed in dermatology. (Tikoo (2011) [12] Use of topical agents should be preferred for treating skin diseases as they have site specific action, less systemic absorption resulting in less side effects and convenient for patient use. In this study the patients have understood how to take care of their skin, using the advice we gave them in patient education on skin diseases like nutrition, hygiene, clothing, temperature and skin inspection

Conclusion

This study is mainly focused on the prescription of pattern drugs and skin diseases in outpatient and inpatient in Dermatology department. This study reveals that generic prescription is very low and suggests that effort must be made to encourage prescribers for generic prescribing which may have a multitude of benefits including cost effectiveness. The average number of drug per one prescription (1.48) is less than compared to WHO standard guidelines (<2). Antihistamines, antifungals and antibiotics dominated the prescribing pattern in this study. In this study the patients have understood how to take care of their skin and it is recommended that the patient education should be encouraged as it helps the patients to understand how to take care of their skin and change their lifestyles.

Conflict of Interest

The authors have no conflict of interest to declare in this study.

Abbreviations

WHO: World Health Organization; ISPOR: International Society for Pharmacoeconomics and Outcomes Research; CMA: Cost Minimization Analysis; CBA: Cost Benefit Analysis, CUA: Cost Utility Analysis; CEA: Cost Effective Analysis; UV radiation: Ultraviolet Radiation.

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