

# RESEARCH AND REVIEWS: JOURNAL OF PHARMACOLOGY AND TOXICOLOGICAL STUDIES

## Morbidity Profile and Drug Utilization Pattern in Allergic Diseases in Skin Outpatients in a Tertiary Care Teaching Hospital at Dehradun, Uttarakhand, India.

Shaktibala Dutta, Mirza Atif Beg\*, Shantosh Kumar, Shalu Bawa, Anil Kumar Mehta, Mohammad Anjoom, and Saubhagya Sindhu.

Department of Pharmacology, SGRRIM & HS, Patel Nagar, Dehradun - 248001, Uttarakhand, India.

### Research Article

Received: 18/04/2014  
Revised: 26/05/2014  
Accepted: 29/05/2014

#### \*For Correspondence

Department of  
Pharmacology, SGRRIM &  
HS, Patel Nagar, Dehradun -  
248001, Uttarakhand, India.

**Keywords:** Drug utilization,  
socioeconomic status,  
prescribing patterns,  
morbidity profile.

#### ABSTRACT

Pharmaco-epidemiological studies in allergic skin conditions are very few. To analyze and assess, common allergic skin conditions and drug prescribing patterns to increase the rational prescribing. Prescriptions of 450 patients attending dermatology OPD of SGRRIM&HS, Dehradun were evaluated, for common skin conditions and drug utilization pattern for 6 months from January 2013 to June 2013 using WHO drug use indicators. A total of 450 prescriptions were analyzed, male: female ratio was 1:1.09, mean age of the patients  $30.29 \pm 1.24$  yrs, 380 (84.45%) belongs to middle socio-economic group and 103 (22.89%) patients had h/o allergic diseases. Disease pattern observed in this study were contact dermatitis 203 (45.11%), urticaria 147 (32.67%), atopic dermatitis 100 (22.22%) respectively. Total 1255 drugs were used, oral formulations 680 (54.18%), topical 575 (45.82%), FDCs (fixed dose combination) 466 (37.13%), 2.79 drugs/prescription were prescribed. Antihistaminic 234 (34.41%) were most commonly used oral drug, 466 (81.04%), topical drugs were prescribed mostly as combination of steroids, antifungal and antibiotics. Antifungals 45 (41.28%) were the most frequent single topical preparations used. All the drugs were prescribed by brand names. Though, dose/strength for topical drugs was inadequately mentioned but chances of error were negligible as the brand had availability in single dose/strength in pharmacy. It is the need of the time, prescribers should be made aware of the demerits of irrational prescribing and they should be cautious and vigilant whenever prescribing FDCs.

#### INTRODUCTION

Dermatological problem in India manifests as primary and secondary, cutaneous complaints. Among them, allergy and itches are widely observed in most of the patients. Dryness of skin, pruritus, hypersensitivity reactions, eczemas, pellagra etc are the common skin problems observed. Usually skin diseases are chronic and require longer therapy for complete removal of problems [1].

Drug utilization research is an essential part of pharmaco-epidemiology as it describes the extent, nature and determinants of drug exposure [2]. Skin disease refers to disorders exclusively of the superficial layers of the skin. Irrational prescribing of drugs is of common occurrence in clinical practice [3]. Most common and important reasons being lack of knowledge about drugs, unethical drug promotions and moreover, irrational prescribing habits by the clinicians [4]. The prescribing behaviour of the doctor

depends upon the input from various sources like patients, academic literatures, professional colleagues, commercial publicity and government regulations. Various prescribing errors are result of ineffective use of these inputs and are very common in clinical practices [5]. The continuous monitoring of prescriptions may help to identify the problems involved in therapeutic decisions and the rational prescribing [6]. Prescription writing requires updated knowledge and skill. It reflects the clinician judgment and behaviour of the physicians. Rational prescription utilizes updated knowledge and adheres to prescribing policies [7]. Irrational prescribing trends lead to unproductive and risky treatment; such a prescription manifests in either exacerbation/prolongation of illness or higher costs or both. Drug utilization studies are useful for obtaining information about drug use patterns [8]. Such analysis not only improves the standards of medical treatment at all levels in the health system, but also helps in identification of problems related to drug use such as poly-pharmacy, drug-drug interaction and adverse drug reaction [9,10]. Hence, the present study was undertaken in patients taking treatment under the dermatology outpatient department (OPD) of the teaching hospital to generate baseline data and analyze various aspects of drug prescribing practices, disease pattern, which are important indicators of rational prescribing.

## MATERIAL AND METHODS

Prescriptions of 450 patients attending dermatology OPD of SGRRIM&HS, Dehradun were evaluated for allergic skin conditions and drug utilization pattern using WHO indicators for 6 months from January 2013 to June 2013. The prescription data were taken and analyzed for the trends in drug use and rationality of prescriptions. Approval of the Institutional Ethics Committee was obtained prior to the commencement of the study. The analysis of parameters like drug classes, the dosage form, dose, number of fixed dose combinations, Defined daily dose (DDD), Prescribed Daily Dose (PDD) and drugs prescribed by generic or brand name was done.

## RESULTS

Overall 450 prescriptions were analyzed, male: female ratio was 1:1.09, mean age was  $30.29 \pm 1.24$  yrs, 380 (84.44%) patients belonged to middle socio-economic group and 70 (15.56%) belonged to lower socio-economic group. 103 (22.88%) patients had a h/o allergic diseases. Disease pattern observed in this study were contact dermatitis 203 (45.11%), urticaria 147 (32.67%), atopic dermatitis 100 (22.22%) respectively (table 1). Total 1255 drugs were used, oral formulations 680 (54.18%), topical 575 (45.82%), FDCs (fixed dose combination) 466 (37.13%), 2.79 drugs /prescription were prescribed (table 2). Antihistaminics 234 (34.41%) were most commonly used oral drugs, (table 3). Antifungals 45 (41.28%) are the most frequent single topical preparation used (table 4). 466 (81.04%) topical combination of steroids, antifungals and antibiotics were prescribed (table 5). All drugs were prescribed by brand names. Though, dose/strength for topical drugs was inadequately mentioned but chances of error were negligible as the brand had availability in single dose/strength in pharmacy. A total of 1255 drugs were prescribed, 627 (49.96%) drugs were prescribed from the National Essential Medicine List 2011 (table 6). Defined daily doses were calculated for the most commonly used oral drugs like Cetrizine, Azithromycin, Levocetizine and Fluconazole. Total 82 Cetrizine tablets were prescribed with Prescribed Daily Dose (PDD) of 10mg, 65 tablets of Azithromycin with PDD of 500mg. 152 tablets of Levocetizine with PDD of 5mg. 27 tablets of Fluconazole with PDD 150/7. DDDs of Cetrizine, Azithromycin, Levocetizine and Fluconazole were 82, 32, 152 and 10 respectively. DDDs/patient/ day were 0.18, 0.07, 0.33 and 0.02 for Cetrizine, Azithromycin, Levocetizine and Fluconazole respectively (table 7).

**Table 1: Demographic profile**

| Parameters           | Number / percentage  |
|----------------------|----------------------|
| Male                 | 215 (47.78%)         |
| Female               | 235 (52.22%)         |
| Mean Age             | $30.29 \pm 1.24$ yrs |
| Middle SES           | 380 (84.44%)         |
| Lower SES            | 70 (15.56%)          |
| H/o allergic disease | 103 (22.88%)         |
| Contact dermatitis   | 203 (77.78%)         |
| Urticaria            | 147 (22.22%)         |
| Atopic dermatitis    | 100 (37.78%)         |

**Table 2: Drug use pattern in allergic diseases**

| Drugs                           | Numbers / percentage |
|---------------------------------|----------------------|
| Total drugs                     | 1255 (100%)          |
| Oral formulation                | 680 (54.18%)         |
| Topical                         | 575 (45.82%)         |
| Fixed drugs combinations        | 466 (37.13%)         |
| Drugs prescribed / prescription | 2.79                 |

**Table 3: Oral Drugs Prescribed in allergic diseases over the study period**

| Total Oral drugs           | Number / percentage |
|----------------------------|---------------------|
| Anti histaminics           | 234 (34.41%)        |
| Multivitamins&antioxidants | 221 (32.50%)        |
| Antibiotics                | 90 (13.23%)         |
| Antifungal                 | 27 (3.90%)          |
| Analgesics                 | 20 (2.90%)          |
| Antiviral                  | 4 (0.5%)            |
| Miscellaneous              | 84 (12.35%)         |

**Table 4: Single topical preparations used over the study period**

| Single topical preparations | Number / percentage |
|-----------------------------|---------------------|
| Clotrimazole cream          | 45 ( 41.28%)        |
| Clindamycin gel             | 24 (22.01%)         |
| Permethrin                  | 10 (9.17%)          |
| Fusidic acid                | 11 (10.09%)         |
| Terbinafine                 | 08 (7.33%)          |
| Mupirocin                   | 05 (4.58%)          |
| Mometasone                  | 06 (5.50%)          |

**Table 5: Topical combination preparations used over the study period**

| Combination topical preparations   | Number / percentage |
|------------------------------------|---------------------|
| Nadifloxacin+mometasone+miconazole | 103 (22.10%)        |
| Clotrimazole+Betamethasone         | 99 (21.24%)         |
| Clobetasol+ Miconazole             | 79 (16.95%)         |
| Clobetasol+ Neomycin               | 67 (14.37%)         |
| Mometasone+Miconazole              | 57 (12.23%)         |
| Clobetasol+ Neomycin sulphate      | 38 (8.15%)          |
| Mometasone+ Fusidic acid           | 23 (4.93%)          |

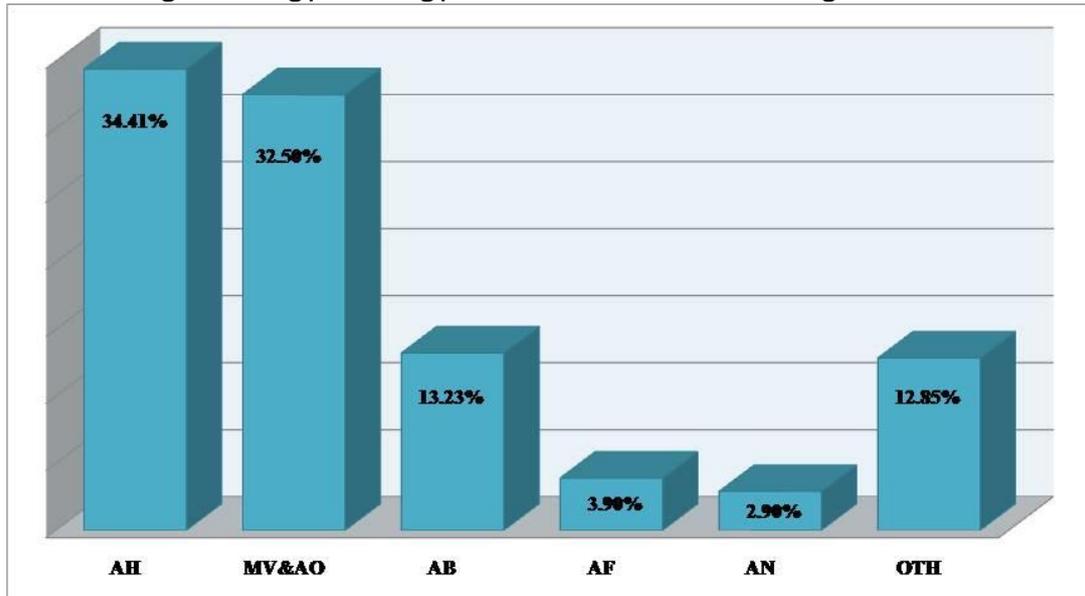
**Table 6: Drugs prescribed from Essential Medicine List over the study period**

| Class           | Drug         | Numbers |
|-----------------|--------------|---------|
| Antibiotics     | Azithromycin | 65      |
|                 | Clindamycin  | 24      |
| Antihistaminics | Cetirizine   | 82      |
| Antifungals     | Fluconazole  | 27      |
|                 | Clotrimazole | 24      |
| Antiparasitic   | Permethrin   | 10      |

Table 7: Defined Daily Dose (DDD)

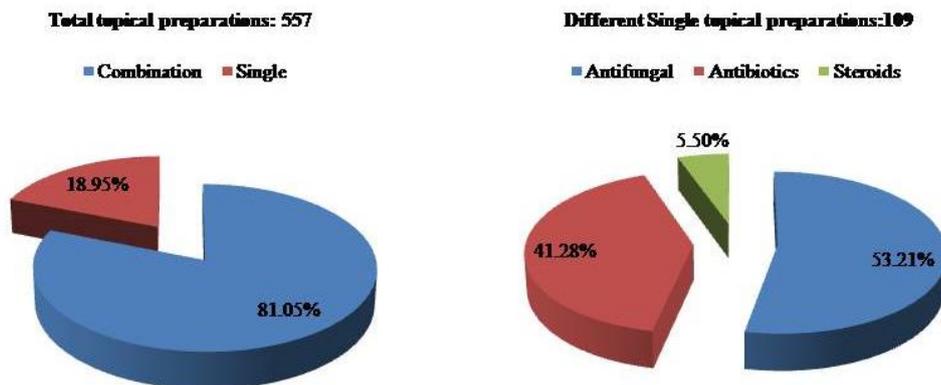
| Name of drug   | No of tablets dispensed | Prescribed strength / item (mg) PDD | Defined Daily Dose (mg) | Total DDDs used | DDD patient/day |
|----------------|-------------------------|-------------------------------------|-------------------------|-----------------|-----------------|
| Cetirizine     | 82                      | 10                                  | 10                      | 82              | 0.18            |
| Azithromycin   | 65                      | 500                                 | 1000                    | 32.5            | 0.07            |
| Levocetirizine | 152                     | 5                                   | 5                       | 152             | 0.33            |
| Fluconazole    | 27                      | 150/7                               | 400/7                   | 10.12           | 0.02            |

Figure 1: Drug prescribing pattern of oral formulation in allergic diseases



AH: Antihistaminics, MV&AO: Multivitamins&Antioxidants, AB: Antibiotics, AF: Antifungals, AN: Analgesics, OTH: Others

Figure 2: Total topical and different single topical preparations used over the study period



## DISCUSSION

Study objectives were to assess drug prescribing pattern in dermatology outpatient department (OPD) in a tertiary care teaching hospital to promote the rational prescribing. In the present study the mean age was 30.29±1.24 years which were comparable with previous study by Alshobaili et al where the mean age group was 25.3 years [11]. Majority of the patients belonged to middle socio- economic group (84.44%). This was comparable with previous study by Narwane et al where 84.66% patients belongs to middle socio-economic class [12]. In our study contact dermatitis (45.11%) was most common allergic condition followed by urticaria (32.67%) and atopic dermatitis (22.22%) which is comparable with Jaiswal et al [13]. The factors which are responsible for the above finding can be humid environmental condition,

overcrowding, poor hygiene and lack of water. These diseases can be predictors of the morbidity pattern of that region. Antiallergics were the most frequently prescribed drug class found in our study followed antibiotics, antifungal and steroids. Our findings suggest that there was a correlation between classes of drug prescribed with disease encountered. The antiallergics prescribed was very high as majority of the patients attending the dermatology OPD had contact dermatitis with itching as a common feature for which antiallergics are prescribed. This data is comparable with study by Narwane SP et al showing antiallergics as the most commonly prescribed drugs [12]. The second most commonly prescribed drugs were multivitamins and antioxidants. Other orally prescribed drugs were antibiotics, followed by antifungals. Azithromycin was the most commonly prescribed antibiotic and fluconazole was the most commonly used antifungal. This finding was comparable with study by Lesher JL et al [14]. 45.82% topical preparations were prescribed. Use of topical preparations were usually preferred for treating skin-diseases as they have site specific action, less systemic absorption resulting in less side effects and convenient for patient use. Majority of topical drugs were prescribed in combinations. This finding was comparable with studies by Khan NA et al and Sarkar et al where 38.2% and 40.5% topical combinations were prescribed [15,16]. Among single topical preparations, antifungals were most commonly prescribed, clotrimazole was most frequently prescribed antifungal agent (41.28%) which was comparable with previous study by Rajathilagam et al where 31% clotrimazole were prescribed [17].

Average number of drugs prescribed per prescription is 2.79 in our study which correlates with other studies carried out by Narwane et al and Sarkar et al which showed average number of drugs per prescription as 2.7 and 2.42 respectively [12,16]. Total number of fixed dose combination was 466 (41.05%) which was comparable with another study by Narwane et al where 36.6% FDCs were prescribed [12]. 100% drugs were prescribed by brand names which was comparable with previous study by Pavani et al [18]. This indicate the generic medications are less preferred and inclination towards the branded medications is common, that may be attributed to misperception regarding the quality of generic products and marketing strategies of the pharmaceutical companies. 232 (18.48%) drugs were prescribed from National Essential Medicine List 2011 which was lesser than previous studies where 51% and 95.78% drugs were prescribed from National Essential Medicine List [19,20].

## CONCLUSION

The prescription audit can be an eye opener for the prescribers. Clinical pharmacist can conduct such periodic audit to rationalize the prescription, reduce errors and suggest an effective management of skin diseases. The hospital administration can look into the issues in the hospital by implementing a formulary into the system so that physicians restrict their prescribing in generic names and effective therapy to the patients as essential drugs will be incorporated in hospital pharmacy [21]. It is the need of time, prescribers should be made aware of the demerits of irrational prescribing and they should be cautious and vigilant whenever prescribing FDCs.

## REFERENCES

1. Patel NG, Patel NJ. Epidemiological study of skin (dermatology) diseases and its treatment in North Gujarat. *Asian J Pharm Clin Res.* 2010;3(4):40-2.
2. Sjoqvist F, Birkett D. Drug Utilization. In: Bramley DW editor. *Introduction to Drug Utilization Research (WHO booklet)*. New York: WHO office of publication; 2003.P.76-84.
3. Ramsay LE. Bridging the gap between clinical pharmacology and rational drug prescribing. *Br J Clin Pharmacol.* 1993;35:575-6.
4. Benet LZ. Principles of prescription order writing and patients compliance instructions. In: Hardman JG, Limbird LE, Molinoff PB, Ruddon RW, Gilman AG editors. *Goodman and Gilman's The pharmacological Basis of Therapeutics.* 9<sup>th</sup> Ed. New York: McGraw-Hill;1996:1617-706.
5. Kastury N, Singh S, Ansari KU. An audit of prescription for rational use of fixed dose drug combinations. *India J Pharmacol.* 1999;31:367-9.
6. Ansari KU, Singh S, Pandey RC. Evaluation of prescribing patterns of doctors for rational drug therapy. *Indian J Pharmacol.* 1998;30:43-6.
7. Kishore J. *National Health Programs of India*, Century Publications, New Delhi, India, 6<sup>th</sup> edition, 2006.
8. Lamichhane DC, Giri BR, Pathak OK, Panta OB, Shankar PR. Morbidity profile and prescribing patterns among outpatients in a teaching hospital in Western Nepal. *MJM.* 2006;9(2):126-33.
9. Michael JC, John T, Catherine H, Julie C, Victoria B, Rachid TA, et al. An audit of adverse drug reactions to aqueous cream in children with atopic eczema. *The Pharmaceut J.* 2003;27(1):747-8.

10. Sweileh WM. Audit of prescribing practices of topical corticosteroids in outpatient dermatology clinics in north Palestine. *Eastern Mediterranean Health J.* 2006;12(1/2):161-9.
11. Alshobaili HA. The pattern of skin diseases in the Qassim region of Saudi Arabia: what primary care physician should know? *Ann Saudi Med.* 2010;30:448-53.
12. Narwane SP, Patel TC, Shetty YC, Chikhalkar SB. Drug Utilization and Cost Analysis for Common Skin Diseases in Dermatology OPD of an Indian Tertiary Care Hospital- A Prescription Survey. *British J Pharm Res.* 2011;1(1):9-18
13. Jaiswal A.K, Bhusban B, Badrinath S. Pattern of skin diseases in the Leh – Ladakh region of India. *Int J Dermatol.*1994; 33:674-5.
14. Leshner JL Jr. Oral therapy of common superficial fungal infections of the skin. *J Am Acad Dermatol.* 1999;40(6 pt 2):S31-4.
15. Khan NA, Abid M, Maheshwari KK, Kaviarasan PK, Mohanta GP. Antibiotic prescribing pattern in department of dermatology of a teaching hospital in Tamilnadu. *Indian J Pharm Pract* 2010;3(3): 18-21.
16. Sarkar C, Das B, Sripathi H. Drug prescribing pattern in dermatology in a teaching hospital in western Nepal. *J Nepal Med Assoc.* 2001;41:241-6.
17. Rajathilagam T et al. *International Journal of Biological & Pharmaceutical Research* 2012; 3(8):968-73.
18. Pavani V, Mihir YP, Shravani K et al. Study of prescribing pattern for evaluation of rational drug therapy in Warangal. *Indian J Pharmacy Practice.* 2011;4(4):77-9.
19. Biswas NR, Biswas RS, Pal PS et al. Pattern of prescriptions and drug use in two tertiary hospitals in Delhi. *Indian J Physio Pharmacol.* 2000; 44:109-12.
20. Georgekutty KV, Sambasivam N, Nagarajan M. A Study on drug prescribing pattern in Madurai city. *Indian J Pharmacol.* 2002; 34:361-2.
21. Markey P, Schanttner P. Promoting evidence-based medicine in general practice-the impact of academic detailing. *Fam Pract.* 2001;18:364-6.