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ANALYSIS OF DRUG UTILIZATION AND PRESCRIBING PATTERN IN DERMATOLOGY OPD IN TERTIARY CARE HOSPITAL, SAUDI ARABIA

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ABSTRACT

Skin diseases are the major contributors of disease burden in society. It affects individuals of all ages, neonates to elderly. Owing to its chronic nature, it causes serious impact on quality of life of the patient and his family. The problem gets compounded with the inappropriate and irrational use of medicines. Periodic prescription audit in form of drug utilization study is a way to improve the quality of prescription and curb the menace of irrational prescribing which has become a global phenomenon. This study aims to determine the drug utilization pattern of skin diseases in dermatology OPD. It was a prospective, cross-sectional study conducted over a period of three months from January to March 2019 in newly diagnosed cases attending outpatient department of dermatology in a tertiary care hospital, KSA. The prescriptions were analysed with the help of descriptive statistics and results were expressed in percentage. Total 650 prescriptions were analysed during the study. Male patients were lesser as compared to female as male to female ratio was 0.88. Over 50% of patients were in adolescent age group i.e. 21-40 years. Acne (17.95%) was most common disease in the study population followed by eczema and Dermatophytosis. Among the drugs, antihistaminics (24.13%) were prescribed most frequently followed by antifungals and antibiotics. Topical agents constituted almost 60% of the total prescription and average number of drugs per prescription was 5.13, irrespective of the dosage forms prescribed.

KEYWORDS: prescription, Dermatophytosis, skin dryness, eczema, antihistamines, antifungal.

INTRODUCTION

Skin is the part of integumentary system that constitutes the largest organ of human body and thus it is exposed to injury by various extrinsic factors such as environmental, chemical, infectious agents as well as intrinsic factors such as metabolic, genetic and immunological. In addition to this, many systemic diseases are also identified by their dermatological manifestations thus it is said metaphorically as a mirror to various internal diseases.[1,2] Skin diseases are common and cause a huge disease burden globally. Collectively skin is the 18th leading cause of health burden worldwide and it was 4th leading cause of nonfatal health burden in 2010 globally.[3] The skin disorders constitute 2% of total Out Patient Department (OPD) consultations worldwide.[4] However no such data is available from Saudi Arabia but still skin disorders in KSA are common and include pyoderma, acne, urticaria, dermatitis, scabies fungal skin infections and alopecia etc.[5] The skin disorders have serious detrimental effect on quality of life of the general population by increasing the suffering in terms of physical, social, psychological as well as it increases financial burden as most of the skin diseases are chronic and requires longer duration of treatment.[6] In Saudi Arabia, there are various problems in prescription pattern of drugs like irrational drug combinations, overuse of emollients, unnecessary use of antibacterial in fungal conditions and prescribing drugs from same class.[7,8] It contributes to the emergence of antimicrobial resistance. Dermatologists account for almost 5% of antibiotic prescriptions worldwide and most of the conditions require prolonged treatment.[9,10] Further, the skin conditions are wrongly diagnosed and treated. Thus continuous monitoring is needed to evaluate pattern of drug use to detect any changes from contemporary practices or available guidelines. Hence in order to generate data, drug utilization studies are need of the hour. As per WHO, Drug utilization studies or research are tools that deals with the marketing, distribution and prescription pattern of drugs and helps to assess the subsequent impact of these on medical and socioeconomic status of patients.[11] Thus drug utilization studies helps in the understanding of prescription pattern as well as the quality of prescription in terms of rationality, drug interactions and financial burden of disease to the individual. These studies have a favourable impact on improving the standards of treatment and identify the problems related to polypharmacy, drug-drug interaction and adverse drug reactions. Periodic auditing of prescriptions in form of drug utilization studies are important tool to enhance the therapeutic efficacy, to minimize the adverse effect, to optimize the cost of the treatment and to provide useful feedback to the clinician.[12,13] Previous studies conducted in Australia suggest that academic detailing improves the quality of prescription and increases the adherence of

clinician to standard treatment guidelines.[14] The data regarding pattern of drug used in Saudi Arabia, particularly in dermatology departments are very limited.

MATERIALS AND METHODS

To study the drug utilization pattern in dermatology outpatient department. The permission to conduct the study was taken from Institutional ethics committee prior to the study. The present study was conducted in Department of outpatient pharmacy, armed forces hospital, Tabuk, KSA. It was a prospective cross-sectional study conducted over a period of three months. A Performa was designed on which the data were compiled and later on analysed through extensive data mining. Prescriptions were collected on three alternate days in a week for a period of three months from January to March 2019. Total 650 prescriptions were collected during the study period, satisfying the WHO criteria for sample size which suggests to include at least 600 encounters in a cross-sectional survey to describe the current prescribing practices, with a greater number, if possible.[15] The inclusion criteria for the study included only OPD patients, first time visitors and newly diagnosed patients. For this electronic prescriptions and Medical Record Number (MRN) were collected from outpatient pharmacy department and also the help of hospital medical record department (MRD) section.

After extensive data mining, various relevant data were derived from the collected prescriptions that included demographic profiles, diagnosis or pattern of skin disease, classes of drug prescribed with their frequency and dosage form. Also, average number of drug prescribed per prescription was done. To calculate the number of drugs per prescription all the drugs in prescription were taken into consideration and divided by total number of prescriptions (n=650). In case of fixed dose combinations (FDC) all the component of FDC were taken separately to calculate the number of drugs.

RESULTS

[Table 1] illustrates the contribution of dermatology clinic in total new patients of hospital during the study period of three months from January to March 2019. Total 55330 new patients attended the outpatient department in Armed Forces Hospital, Tabuk, Saudi Arabia amongst which 8294 (14.99%) patients attended the dermatology OPD. Of these prescriptions 650(n) prescriptions were found to satisfy the inclusion criteria for the study and were included for analysis.

Table 1: Hospital OPD Data.

Month (2019)	Total OPD Patients	Dermatology OPD
January	18700	2640
February	18150	2860
March	18480	2794
Total	55330	8294

DEMOGRAPHIC DATA

[Table 2] shows that in this study number of male patients was 265 (40.76%) while number of female patients was 385 (59.24%) thus female patients outnumbered the males in this regard and male to female ratio was 0.88.

Table 2: Total prescriptions collected = 650 (n).

Male	265	40.76%
Female	385	59.24%
Ratio	0.88	100

[Table 3] represents the age distribution of the study population where more than 50% of the patient were in the age group of 21 to 40 years and of them highest no. of patient were in the age group of 31-40 years (30.46%), followed by 21-30 year age group (24.61%). No of patients at two extreme of ages were very less i.e. above 61 years only 2.15 % followed by 6.15 % at 0-10 years. It was found that there was progressive increase in number of patients as the age of the patient increases, till 40 years and then there was a decrease in number of patient.

Table 3: Age distribution.

Age distribution	No. of Patient	Percentage
0-10	40	6.15
11-20	63	9.69
21-30	160	24.61
31-40	198	30.46
41-50	137	21.07
51-60	38	5.84
61 & above	14	2.15
Total	650	100.00

DATA ON DISEASE DISTRIBUTION

As in [Figure 1], acne with (17.95%) was most common dermatological disorder closely followed by eczema (16.62%) and Dermatophytosis (14.89%). Very small percentage of patients had scabies (7.57%) especially in paediatric age group. Alopecia (4.12%) and

psoriasis (3.06%) were other disease but these were relatively uncommon. Pigmentation disorders including both hyper and hypo-pigmentation were 3.47%.

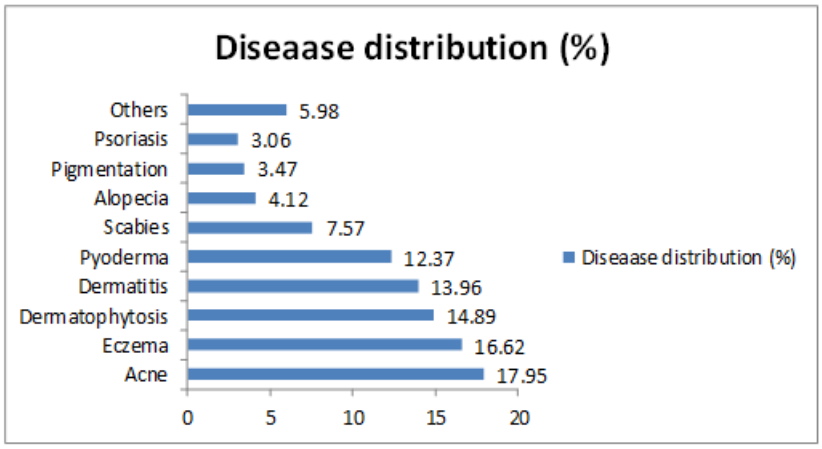
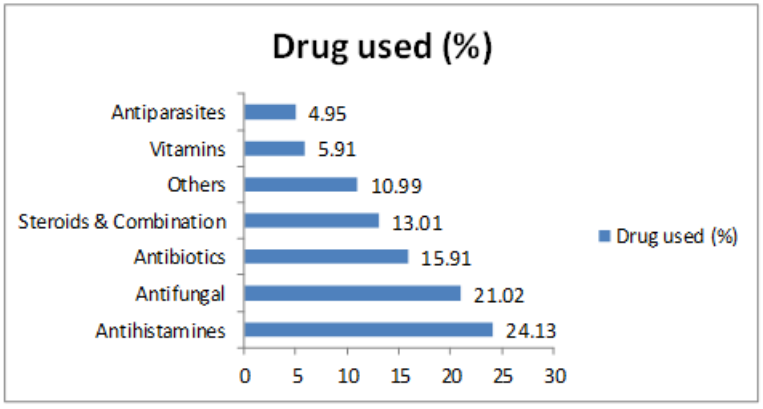


Figure 1: Data on disease distribution.

DATA RELATED TO DRUG USAGE

As shown in [Fig-5], antihistaminics were the most common drugs prescribed (24.13%). Among antihistaminic second generation antihistaminics levocetrizine (41.22%) was used less commonly.



Antifungal (21.02%) was the second most common prescribed drug class. Among oral antifungals, fluconazole (53.12%), itracnazole (21.73%) were used and among topical agents clotrimazole, ketoconazole were used in form of powder, shampoo and soaps. Terbinafine (15.2%) was also used in cream form for dermatophytosis treatment. Antibiotic (15.91%) were used in both oral (39.27%) as well as topical (60.73%) route. Among oral antibiotics, azithromycin, amoxicillin-clavulinic acid and among topical antibiotics, clindamycin for acne treatment was very common, other than this mupirocin and fucidic acid and other fixed dose combinations of two or more antibiotics or along with steroids were used very frequently.

Topical steroids and their combinations were prescribed more frequently than oral or parenteral forms of steroids. This may be attributed to various systemic side effects of oral or parenteral steroid. Among antiparasites permethrin, for scabies and albendazole and mebendazole as anthelmintics were prescribed in very few cases. Other drugs used in the treatment of skin diseases were some anti- herpes drugs, some antimetabolites like methotrexate, keratolytic, emollients and etc. As the number of new cases with these diseases were very less so we grouped all these drugs as other drugs and these constituted 5.91% of the prescriptions.

DOSAGE FORMS AND DRUGS

Drugs used in various dosage forms and route of administration for treatment of skin disease. It included oral form i.e. tablets (45.21%), various topical (52.33%) route of administration. intralesional corticosteroids, and systemic fungal infections. Various anti-bacterial and antifungal agents were prescribed in topical dosage forms as clotrimazole solution, ketoconazole shampoo, mupirocin ointment, fucidic acid ointment lotions gel, cream. Also, various corticosteroid and their combinations in ointment and gel forms were also available and prescribed. Tablet was prescribed most commonly (32.14%) that included various antihisaminics, antiacne, antifungal and antacids preparations. Some antacids, antibacterial and multivitamins were prescribed in capsule form (4.07%) also. In topical agents, ointment was the most common dosage form prescribed (23.12%) with different compositions of steroid and their combinations, some antifungal and antibacterial drugs. This was followed by lotion (13.01%), as zinc calamine lotion for soothing, astringent, antipruritic effect and gel preparations (10.94%) as for antiacne and antibacterial preparations. Powder forms were prescribed for external use in (5.21%) of cases and it was mostly antifungal preparation and dusting powder.

NUMBER OF DRUGS PER PRESCRIPTION

Total numbers of drugs prescribed in 650 prescriptions were 3285. Thus average number of drugs per prescription in this study comes to 5.05. However, it had a large variation depending on type of disease and its severity. Most of the prescription had 4 to 5 drugs while very few prescriptions with disease of lesser severity were treated with only one or two drugs. Some other patients with very extensive disease condition required 6 or more drugs of different classes including systemic as well as topical agents.

DISCUSSION

PATIENT RELATED DATA

In our study the total no of new patients attending skin OPD was 14.99% of the total OPD attendance. These included new as well as follow up patients. Of the 650 prescription collected, no. of females were more than the no. of male that was in line with the study of Manjusha Sajith et al., and differs slightly from the study of Bijoy KP et al.[18,19] In this study, more than 50% of the patients were adult in the age group 21-40 years; this was higher than the study conducted by Bijoy KP et al., and Sarkar et al.[19,20]

DISEASE DISTRIBUTION

Our study findings suggested that acne was most common disease of skin at our institute in the study duration. This was more common in females, involving face and in some cases on chest and back; mostly these were mild and non-scarring. In this study the age group most commonly affected by acne was adolescents group this may be due to androgen induced increased sebum production, formation of comedone by excessive keratin deposition, follicle colonization by Propionibacterium acnes bacteria leading to inflammation and release of pro-inflammatory mediators in the skin.[21] In a study by Sarkar et al., cutaneous infections (40%) were the most common dermatologic condition followed by eczema (31%).[20] in our study eczema with myriad aetiologies was next in order. Atopic dermatitis, allergic contact dermatitis, seborrhoeic dermatitis was three common types encountered. The common fungal infections were dermatophytosis e.g. tinea cruris (ring worm), tinea capitis, tinea corporis and candidiasis. This may be due to sweating and poor personal hygiene. Other disorders like psoriasis, leprosy and pigmentary disorders were very less in number.

PATTERN OF DRUG USE

Our study finding showed antihistaminics as the most commonly prescribed drug class followed by emollients, antifungals, antiacne and antibiotics which was similar to the study carried out by Narwane SP et al., showing antiallergics as the most commonly prescribed drug followed by antifungal and antibiotic.[22] This is expected as pruritus is one of the major complaints associated with majority of skin diseases and it is very troublesome and socially annoying to patient.[23] Antihistaminics are the mainstay for treatment of pruritus, and it is also prescribed other allergic conditions. Among these, second generation antihistaminics, that are nonsedative bears the major part of all the prescriptions. Levocetrizine, and loratidine are the main drugs in this group. These were prescribed mainly at the day time and patients

were advised to avoid driving after taking medicines.[24] Sedative antihistaminics like levocetrizine was prescribed for severe cases of urticaria, intractable pruritus; eczema etc and patients were usually prescribed to take them at bedtime. Antifungal drugs were the second most widely prescribed class in our study which was less prescribed as compared to the study conducted by Yuwante AH et al., in which it was 33.5% of the total drug used.[25] In our study topical antifungal e.g. clotrimazole, ketoconazole, terbinafine etc. were prescribed more frequently (82.12%) than the oral antifungals like fluconazole and itraconazole. Further fluconazole was most common in oral antifungal group this may be due to its cost effectiveness and once in a week dosing. Antibiotics including antisceptics constitute (16%) of prescription which was almost equal to the study conducted by Yuwante AH et al.[25] Steroids and their various FDC contributed (13.05%) of total prescriptions. Here also topical agents were prescribed in maximum number of patients. This may be due to various side effects associated with systemic steroid therapy as well as its site specific action, less systemic absorption resulting in fewer side effects and convenient for patient use. This finding was comparable with studies by Sarkar C et al., and Khan NA et al., that showed steroid and antibiotics were most commonly prescribed topically.[20,26] Topical corticosteroids are mainly used for non-infective dermatologic disorders such as atopic dermatitis and contact dermatitis, lichen planus, psoriasis etc., Beyond this a large number of drugs e.g. multivitamins, retinoids, immunosuppressants, paraciticides etc were also prescribed in our study for the treatment of particular disease but individually these contributed to very small percentage of cases.

Frequency, duration of administration, dose/strength and diagnosis was specified in majority of prescriptions (96%) in our study which shows rational prescribing also majority of prescriptions were complete with respect to patient related data and doctors name and bleep number. All the OPD electronic prescriptions were being monitored by the OPD pharmacy spontaneous reporting of adverse drug reactions and patient were educated by the highly trained pharmacists.

CONCLUSION

Drug utilization study is an effective tool to promote rational and cost-effective drug prescribing. Despite all the limitations such as small sample size, shorter study duration, and single study centre etc the study may prove to be an eye opener for the healthcare provider. This study suggests the prescribers to consider factors as polypharmacy, rationality of

prescription before writing any prescription. Hospital authority should also take concrete steps to ensure generic prescribing and to sensitize the physicians regularly regarding the need of rational prescribing by conducting continuing medical education.

REFRENCES

1. Clark AF, Ghosh K, Tonnesen MG, Tissue Engineering for Cutaneous Wounds Journal of Investigative Dermatology, 2007; 127: 1018-29.
2. Engman MF, The Skin: A Mirror to the System JAMA, 1919; 73(21): 1565-68.
3. Hay RJ, Johns NE, Williams HC, Bolliger IW, Dellavalle RP, Margolis DJ, The Global Burden of Skin Disease in 2010: An Analysis of the Prevalence and Impact of Skin Conditions Journal of Investigative Dermatology, 2014; 134: 1527-34.
4. Saravanakumar RT, Prasad GS, Ragul G, Mohanta GP, Manna PK, Moorthi C, Study of prescribing pattern of topical corticosteroids in the department of dermatology in multi-speciality tertiary care teaching hospital in south India Inj J Res Pharm Sci, 2012; 3(4): 685-87.
5. Gangadharan C, Joseph A, Sarojini PA, Pattern of skin diseases in Kerala Indian J Dermatol Venereol leprol, 1976; 42: 49-51.
6. Joel JJ, Jose N, Shastry CS, Patterns of Skin Disease and Prescribing Trends in Rural India Sch Acad J Pharm, 2013; 2(4): 304-09.
7. Soumerai S, Factors influencing prescribing Aust J Hosp Pharm, 1988; 18(suppl): 9-16.
8. Hogerzeil HV, Promoting rational prescribing: an international perspective Br J Clin Pharmacol, 1995; 39: 1-6.
9. Divyashanthi CM, Nandhini A, Kumar SA, Study on drug utilization pattern of antibiotics among dermatology in-patients of a tertiary care teaching hospital, Karaikal, Puducherry Int J Basic Clin Pharmacol, 2014; 3(6): 1072-77.
10. Chon SY, Doan HQ, Mays RM, Singh SM, Gordon RA, Tyring SK, Antibiotic overuse and resistance in dermatology Dermatologic Therapy, 2012; 25(1): 55-69.
11. Sjoqvist F, Birkett D, Drug utilization. In: Bramley DW, editor Introduction to Drug Utilization Research (WHO Booklet) New YorkWHO Office of Publication, 2003; 76-79.
12. Sweileh WM, Audit of prescribing practices of topical corticosteroids in outpatient dermatology clinics in north Palestine Eastern Mediterr Health J, 2006; 12(1/2): 161-69.
13. Good CB, Polypharmacy in elderly patients with diabetes Diabetes Spectrum, 2002; 15(4): 240-48.

14. Markey P, Schattner P, Promoting evidence-based medicine in general practice - the impact of academic detailing Fam Pract, 2001; 18(4): 364-66.
15. Prasad PS, Rudra JT, Vasanthi P, Sushitha U, Sadiq MJ, Narayana G, Assessment of drug use pattern using World Health Organization core drug use indicators at Secondary Care Referral Hospital of South India CHRISMED J Health Res, 2015; 2: 223-28.
16. Shankar RP, Partha P, Nagesh S, Prescribing patterns in medical outpatients Int J Clin Pract, 2002; 56(7): 549-51.
17. Kumar AK, Chen LC, Choudhary M, Ganju S, Mahajan V, Sinha A, Financing health care for all: challenges and opportunities Lancet. DOI: http://dx.doi.org/10.1016/S0140-6736 (10)61884-83, 2011; 377(9766): 668-79.
18. Sajith M, Lokhande KD, Padma S, Pawar AP, Prevalance of various skin disorders and prescribing pattern of antihistamines in tertiary care hospital, Pune Int J Pharma Sci Res, 2014; 5(3): 73-78.
19. Bijoy KP, Vidyadhar RS, Palak P, Chintan SP, Atmaram PP, Drug prescribing and economic analysis for skin diseases in dermatology OPD of an Indian tertiary care teaching hospital: a periodic audit Indian J Pharm Pract, 2012; 5(1): 28-33.
20. Sarkar C, Das B, Sripathi H, Drug prescribing pattern in dermatology in a teaching hospital in western Nepal Journal of Nepal Medical Association, 2001; 41: 241-46.
21. Simonart T, Immunotherapy for acne vulgaris: current status and future directions Am J Clin Dermatol, 2013; 14(6): 429-35.
22. 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 Journal of Pharmaceutical Research, 2011; 1(1): 9-18.
23. Leslie TA, Greaves MW, Yosipovitch G, Current topical and systemic therapies for itch Handb Exp Pharmacol. Doi: 10.1007/978-3-662-44605-8_18, 2015; 226: 337-56.
24. Skidgel RA, Kaplan AP, Histamine, Bradykinin, and Their Antagonists. In: Bruton LL, Chabner BA, Knollmann CB. Editors the Pharmacological Basis of Therapeutics 12th edNew Delhi McGraw Hill, 2011; 911-935.
25. Yuwnate AH, Chandane RD, Giri KR, Yunati MS, Sirsam SS, A multicentre pharmaco-epidemiological study of dermatological disorders in Wardha district Int J Basic Clin Pharmacol, 2013; 2: 751-56.
26. Khan NA, Abid M, Maheswari KK, Kaviarasan PK, Mohanta GP, Antibiotic prescribing pattern in department of dermatology of a teaching hospital in Tamil Nadu Indian J Pharm Pract, 2010; 3(3): 18-21.

27. Gupta N, Sharma D, Garg SK, Bhargava VK, Auditing of Prescriptions to study utilization of antimicrobials in a tertiary hospital Ind J Pharmacol, 1997; 29: 411-15.