DRUG UTILIZATION PATTERN AND COST ANALYSIS OF DRUGS USED AT DERMATOLOGY OUT PATIENT DEPARTMENT IN A TERTIARY CARE HOSPITAL

Anita Yadav,[1] Birendra Kumar Yadav,[1] Pradip Chhetri[2]

ABSTRACT

INTRODUCTION

The irrational prescription of drugs is highly prevalent among patients suffering from skin diseases. Since it has a serious impact on health and economy, there is an urgent need to study drug utilization pattern in hospital settings. Therefore, this study aims to investigate drug utilization pattern and its cost analysis in Dermatology Out Patient Department in a tertiary care teaching hospital.

MATERIAL AND METHODS

A four-month, prospective, cross-sectional descriptive study was conducted from 10th February 2022 to 10th June 2022 in newly diagnosed cases attending Out Patient Department of dermatology at Universal College of Medical Sciences, Bhairahawa, Nepal. Ethical approval was obtained from the Institutional Review Committee (UCMS/IRC/037/22). Purposive consecutive sampling technique was used. The data were collected from patient cards and details were filled in predesigned proforma. The collected data were analyzed in Statistical Package for Social Sciences version 20.

RESULTS

A total of 601 prescriptions were scrutinized. The common skin condition found was eczema (9.98%) while the common classes of drugs prescribed were antifungals (31.94%). The number of drugs per prescription varied from one to five with an average of 3.11. It was observed that 3.95% of prescription was by generic names. The maximum of drugs (36.06%) was prescribed in tablet form. The percentage of antibiotics prescribed and drugs prescribed from the WHO Essential Drugs List were 12.31% and 27.88% respectively. The average cost per prescription calculated was 739.39 Nepali Rupees.

CONCLUSION

A drug utilization study can help to rationalize prescriptions, reduce errors, and improve cost-effective treatment.

KEYWORDS

Cost analysis, Drug utilization study, Essential Drug List, Prescription pattern, Skin Disease

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INTRODUCTION

Skin is the largest organ in the body, protects non-aquatic animals from contaminants and microbes in the environment, as well as prevents dehydration.[1,2] Dermatological diseases account for up to 2% of general practice consultations around the world and in low and middle-income nations, dermatological problems account for a remarkable portion of the global illness burden.[3-5]

Public awareness regarding personal hygiene and healthy living is crucial for reducing the burden of skin diseases and improving the quality of life in people, particularly in developing nations.[6] The number of patients suffering from skin diseases is increasing globally as well as in Nepal.[7] According to World Health Organization (WHO), Drug utilization study is about the marketing, distribution, prescription, and use of drugs in a society, with specific attention to the related medical, social, and economic outcomes.[8] The primary goal of drug utilization is to assist people to utilize medications more rationally and also to detect the current prescribing pattern.[9,10]

Several studies in Nepal have shown that irrational prescription of drugs is highly prevalent among patients suffering from skin disease.[11] Irrational prescribing has a serious impact on health and the economy, so there is an urgent need for knowledge of the drug utilization pattern and its cost analysis in the dermatological department.[12] Considering these facts the present study was done to examine the pattern of drug utilization and its cost analysis at the dermatology Out Patient Department (OPD) in a tertiary care hospital.

MATERIAL AND METHODS

A prospective, cross-sectional descriptive study was conducted at the OPD of Dermatology at the Universal College of Medical Sciences Teaching-Hospital (UCMS-TH), Bhairahawa, Rupandehi Nepal from 10th February 2022 to 10th June 2022. Ethical approval was obtained from the Institutional Review Committee of UCMS-TH (UCMS/IRC/037/22).

The newly diagnosed cases who visited the dermatology OPD and patients over the age of 18 years of both sexes were included in the study. The same patients who returned to the department of dermatology with a new skin problem during the research period were also included in the study. Patients with severe burns, follow-up patients, and skin disease in psychiatric patients, were excluded from the study. Sample size was calculated by using Cochran's formula for cross-sectional study, $n = [z^2 \ast pq] / d^2$ Where, p = prevalence of skin disease = 62% = 0.62[13], q = (1-p) = (1-0.62) = 0.38, z = confidence interval level 95% = 1.96, d = acceptable error = 4%. So, $n = z^2 pq / d^2 = (1.96)^2 \ast 0.62 \ast 0.38 / (0.04)^2 = 565.675$.

The WHO recommends including at least 600 encounters in a cross-sectional survey to describe current prescribing practices and analyze drug utilization in health facilities with a larger number if possible.[14] Therefore, a slight modification was done in sample size, and a total of 601 prescriptions were analyzed. The purposive consecutive sampling technique was used and the data were gathered by reviewing the prescription paper and the required information was recorded in a structured data collection sheet (predesigned proforma). This proforma contained patient's demographic profile along with (name, age, and sex) followed by prescribed drugs (brand name, generic name, route of administration, dose, and dosing frequency). After the collection of data, the data were entered and analyzed in the latest version of SPSS (Statistical Package for the Social Sciences) version 20. Descriptive indices, including frequency, percentage, mean, and standard deviation, were used to express data for all variables.

RESULTS

A total of 601 cases were analyzed and the overall numbers of male patients were 250 (41.6%) while the numbers of female patients were 351(58.4%) and the highest number of patients were in the age group of 21-40 years (55.9%), followed by 41-60 year age group (28.8%), and the mean age of study population was 34.60±13.611) years. Among the participants, 80.7% were Hindus followed by Muslims (16.8 %). Out of 601 prescriptions, the majority of the population were housewives (33.9%) followed by unemployment (23.5%), and it is found that a large proportion of the study population was illiterate (52.6%).

Table 1. Socio-demographic characteristics of outpatients visiting the dermatology department

Variables	Frequency (n=601)	Percentage (%)
Age (years)		
Less than 20	76	12.6
21-40	336	55.9
41-60	173	28.8
Above 60	16	2.7
Gender		
Male	250	41.6
Female	351	58.4
Religion		
Hindu	485	80.7
Muslim	101	16.8
Christian	15	2.5
Occupation		
Farmer	86	14.3
House wife	204	33.9
Employed	134	22.3
Unemployed	141	23.5
Self business	36	6.0
Education		
Illiterate	316	52.6
Literate	285	47.4

The results of this study showed that eczema was the most common dermatological disease (9.98 %), followed by Tinea incognito (8.81 %). The details of patients based on illness are shown in Table 2.

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Table 2. Distribution of patients based on illness

Types of illness	Number of cases (n)	Percentage (%)
Alopecia areta	38	6.32
Tinea cruris	22	3.7
Tinea incognito	53	8.81
Irritant contact dermatitis	22	3.7
Eczema	60	9.98
Chronic Eczema	15	2.49
Melasma contact dermatitis	31	5.15
Hand Eczema	16	2.66
PityriasisVersicolor	11	1.83
Acne Form eruption	28	4.65
Lichen spinlosus	8	1.33
Tinea Corporis	16	2.66
Gonorrhea	8	1.33
Chronic Paronychia	18	2.99
Psoriasis and T. pedis	19	3.16
Vaginal Candidiasis	18	2.99
Onychomycosis with T. incognito	15	2.49
Urticaria	24	3.99
Scabies	6	0.99
Acne Grade 3	22	3.66
PMLE (Polymorphic Light eruption)	19	3.16
Others	132	21.96
Total	**601**	**100.0**

Out of 601 prescriptions, three drugs per prescription were most commonly prescribed (n=205).The least common was one drug per prescription (n=23) as shown in figure 1.
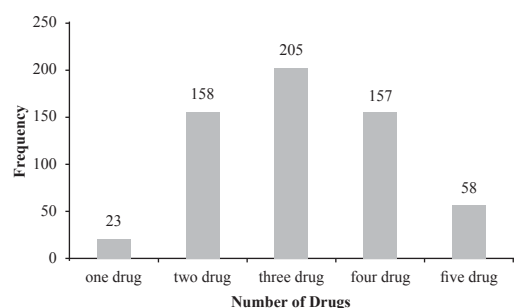
Figure 1. Distribution of encounters based on the number of drugs prescribed

As in figure 2, Antifungals were the most common class of drugs prescribed (31.94%) followed by keratolytic and Emollients (26.61%), Antihistamines (13.78%), and the least prescribed drugs were Antiparasite and antiseptic (2.02%).
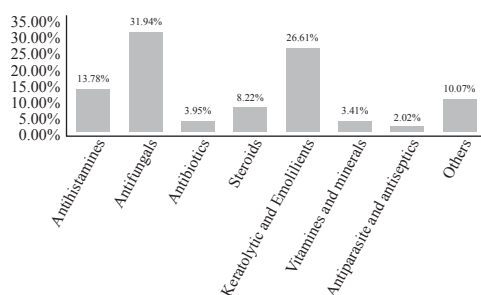
Figure 2. Distribution of various classes of dermatological drugs prescribed

Out of 601 prescriptions, the fixed drug combinations were found in 179 prescriptions. The most common fixed drug combination prescribed was Neosalic 6- Ointment (n=45, 25.14%) which is composed of (Clobetasol Propionate + Salicylic acid).

Table 3. Frequency of utilization of different fixed drug combinations

Fixed drug combination	Number (n)	Percentage (%)
(Clobetasol Propionate + Salicylic acid) ointment	45	25.14
(Clotrimazole + Beclomethasone) cream	33	18.44
(Fusidic acid + Betamethasone) cream	30	16.76
(Helobetasol propionate + Salicylic acid) ointment	26	14.53
(Clobetasol + Gentamycin) cream	25	13.97
(Clobetasol Propionate + Salicylic acid) ointment	12	6.70
(Lidocaine + Chlorhexidine Gluconate + Metronidazole) gel	8	4.46
Total	**179**	**100.00**

Tablets were prescribed most commonly (36.06%) that include various antihistamines, antifungals, and antibiotics. Some antibacterial, antifungal, and multi-vitamins were prescribed in capsule form (5.66%) also. Various antifungal and antibacterial agents were prescribed in a topical dosage form. Among the topical agents, cream was the most common dosage form prescribed (27.78%). Powder forms were prescribed for external use in (1.88%) of cases.

Table 4. Different types of dosage forms used

Route of Administration	Dosage Form	Total no. of Drugs	Percentage (%)
Oral	Tablets	675	36.06
	Capsule	106	5.66
Topical	Cream	520	27.78
	Ointment	252	13.46
	Lotion	98	5.24
	Gel	91	4.86
	Shampoo	75	4.00
	Face wash	10	0.53
	Powder	35	1.88
Parental	Injection	10	0.53
	Total	**1872**	**100.00**

According to this study, the least amount of medicines was prescribed using the generic name (3.95%), while 27.88% of the medicines were prescribed from the WHO Essential Drug List (WHO-EDL).

Table 5. WHO prescribing indicators data

Prescribing indicators	Average or Percentage	WHO standard
The average number of drugs per encounters	3.11 (1872/601)	1.6-1.8
Percentage of drugs prescribed by generic name	3.95% (74/1872*100)	100%
Percentage of encounters with antibiotics prescribed	12.31% (74/601*100)	20.0-26.8%
Percentage of drugs prescribed from EDL	27.88% (522/1872*100)	100%
Percentage of encounters with injection prescribed	1.66 (10/601*100)	13.4-24.1%

Based on WHO prescribing indicators, the average number of drugs prescribed per encounter was 3.11, which was higher than the WHO standard range limit, and the percentage of drugs prescribed by generic names was 3.95 %, which was lower than the recommended WHO standard and the

percentage of drugs prescribed from WHO-EDL was 27.88%, which was also lower. The percentage of antibiotic prescription encounters was 12.31 %, which was also lower than the WHO standard range. The average cost per encounter was calculated by using the formula:

Average cost per encounters = Total cost of all drugs prescribed / number of encounters surveyed = 444373.03 / 601 = 739.39.Therefore the average cost per encounter is 739.39 Nepali Rupees.

DISCUSSION

This study revealed that females were more likely to use dermatological drugs (58.4 %), followed by males (41.6 %), which was consistent with the previous study.[15] This is because the female population in Nepal is more than the male population and females are equally exposed to the causative factors of skin diseases as males, as they share the same working environment. The most common age group with skin diseases was 21-40 years (55.9%) which was also comparable to the previous study.[6] This is because this age group is mostly exposed to the aggravating factors that serve as the reason for skin diseases.

According to disease distribution, the current study showed that eczema (9.98%) was one of the most common dermatological manifestations, which was similar to the previous study.[16] This could be due to excessive sweating, high humidity, and, poor personal hygiene.

In the current study, antifungals (31.94%) were found to be the most commonly prescribed drug. This finding is similar to the studies conducted by Yuwnate et al.[17] in India. However, another study conducted by JJ et al.[18] in South India showed that commonly prescribed drugs for skin disease were antihistamines (25.6%). This could be expected because of the difference in disease prevalence between the different study areas. Our study showed that the majority of the population had fungal infections such as Tinea corporis, Tinea pedis, Tinea incognito, Tinea cruris, and candida infections. Because of this reason also antifungals were highly prescribed.

Our study findings revealed that antifungals (31.94%) were the most commonly prescribed drug class, followed by keratolytic and emollients (26.61%) and antihistamines (13.78%), which was different from the study conducted by Al Bulwi et al.[16] in Saudi Arabia. Their study showed that antihistamine is the most commonly prescribed and antifungal is the second most commonly prescribed drug.

Moreover, our study showed there was a correlation between fixed drug combinations and with disease encountered. Eczema (9.98%) was the highest pattern of skin illness and (Clobetasol Propionate + Salicylic acid) ointment (25.14%) is widely used to treat eczema. Among the total number of drugs prescribed, most of them were prescribed topically. The reason for a high percentage of topical drugs being prescribed is that the topical route has minimum side effects, site-specific action, and is convenient for patient use. This was comparable with the study conducted in India by Pathak et al.[2] where topical dosage forms prescribed were 51.93%

followed by oral 47.11%.

The average number of drugs per encounter in our study was 3.11, which was higher than the WHO standard (1.6-1.8). Similar studies conducted by Vineeta et al.[19], Pathak, et al.[2] and Shakya[20] found the average number of drugs per encounter was 3.35, 2.95, and 5.13 respectively which was higher than the WHO standard and our study represented the incidence of polypharmacy. The reason behind the polypharmacy may be due to the patient's demand, desire to treat several comorbid conditions at the same time, and inappropriate diagnosis of the definitive cause of disease. There is a need to educate the patients and prescribers on the hazards of polypharmacy.

The percentage of antibiotic encounters in this study was 12.31%, which was lower than the WHO standard (20.0-26.8%) and comparable to the previous similar study.[21] This finding suggests that antibiotics were prescribed appropriately and that there was no overuse.

In this study, the percentage of drug prescriptions by generic names was 3.95%, which is lower than the WHO standard (100%). This result was dissimilar to the study conducted by Shakya[20] where 40.67% of drugs were prescribed by generic names. Drugs must be prescribed by their generic names to avoid confusion and minimize costs.

During the study period, the percentage of drugs prescribed by the WHO-EDL was found 27.88%, which was not identical to the WHO standard (100%). The previous study obtained a similarly low percentage (22.45%) in their study, which was lower than ours.[21] One possible reason for this lower value is that prescribers do not understand the significance of an essential drug concept. The fact that fewer drugs are prescribed by generic names and fewer drugs are prescribed from WHO-EDL indicates the irrational use of dermatological drugs. The use of drugs from the essential drug list should be encouraged to make the best use of limited financial resources, to ensure acceptable safety, and to meet the health needs of the majority of the population.

The average drug cost per prescription in our study was Nepali Rupees 739.39/-, which was high when compared to the study by Vineeta D et al.[19] This high cost could be attributed to the lack of generic drugs in prescriptions, as well as the high cost of dermatological products. This cost did not include the amount spent by the patient on other expenses such as diagnostic costs, travel costs, and lost wages. The use of generic drugs will reduce the disease's economic burden.

CONCLUSION

The current study showed the practice of polypharmacy, low generic prescribing with no antibiotic overuse which is a good practice. Therefore, this study suggests that prescribers should consider factors such as polypharmacy, the rationality of prescription, and cost-benefit analysis before writing any prescription. Hospital authorities should also take concrete steps to ensure generic prescribing to reduce the cost of treatment and to sensitize physicians regularly regarding the need for rational prescribing by conducting continuing medical education. This study also suggests periodic evalua-

tion of prescription patterns to monitor and improve the quality of prescriptions in other departments of the hospital. The hospital should make essential drugs available with continuous monitoring to improve the prescribing pattern.

The study was conducted at a single center for a short duration of time. Hence, seasonal variations could also have an impact on the prescribing trend. One of the limitations of the study was the small sample size; therefore, a large sample size should be considered. The study should be conducted through multi-centered research to produce better results.

CONFLICT OF INTEREST

None

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