Assessment Of Drug Prescribing Patterns of Various Skin Diseases by Using Who Drug Use Indicators in Dermatology Department

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ABSTRACT:

Aim: To Assess Drug Prescribing patterns of various skin diseases by using WHO Prescribing indicators.

Objectives: The main objective of this study is to determine the prevalence of various skin diseases and assessing the rational use of drugs and prescribing patterns of various skin diseases by using WHO drug use indicators.

Methods: A cross sectional observational study was carried out for 6 months and collected a total of 575 cases. The data was recorded in the specific designed standardized Performa, analysed using Microsoft Excel.

Results: In our study, out of 575 patients 337 were males and 238 were females. Prevalence of skin diseases observed in this study comprised of 235(40.8%) of infectious diseases and 340 (59.1%) of non-infectious diseases were found. Among the 235 infectious diseases fungal infections were high. In this study of 575 prescriptions, it was observed that Average number of drugs per encounter was 3.56 and percentage of generic drugs prescribed was 80.89%. The percentage of antibiotics prescribed was 28.8%, Percentage of injections prescribed was 0.69% and the percentage of drugs prescribed from the WHO EDL was 82.91%.

Conclusion: The present study was concluded that the rational drug prescribing pattern was assessed according to WHO prescribing indicators and indicated that prescribing patterns of medications should be considerably improve. Therefore, trainings and workshops should be organized from time to time to enlighten the prescribers on current trend in dermatological treatments.

Keywords: Dermatology, Prescription pattern, WHO drug use indicators, Antibiotics, Rationality

INTRODUCTION:

- Skin is the part of integumentary system and is the largest organ of human body. It is exposed to injury by extrinsic factors such as chemical and environmental factors, including infectious agents; and intrinsic factors like genetic, immunological and metabolic factors. It comprises about 15% of the body weight. It is composed of three layers: epidermis, dermis, and subcutaneous tissue (fat). It serves as the main protective barrier against damage to internal tissues from trauma, ultra violet, temperatures, toxins and bacteria. The skin is also responsible for sensory perception, temperature regulation and production of vitamin D and excretion of waste products. In addition to preventing harmful substances from entering the body. It also controls the loss of vital substances from the body .It is therefore important that the skin remains intact to allow the body to perform these essential functions.
- Skin diseases in developing countries, like India, have a serious impact on people's quality of life.
- Dermatology is a discipline where the therapy can be directly administered to the target site. Skin diseases get transmitted usually in people who are living under unhygienic and low socio-economic conditions. The skin disease pattern differs from countries and across different parts within a country.
- Drugs play an important role in protecting, maintaining, and restoring health. The drug therapy is mainly aimed at prevention, cure, or control various disease states. The rational use of medications is a worldwide concern.
- Patients should receive the right medications appropriate to their clinical needs, at the right dose, for the right period, at the lowest possible cost to them and their community. Enhancing the standards of medical treatment at any healthcare system can improve the quality of life in developing countries. One method to promote rational drug use is the assessment of drug prescribing patterns based on drug use indicators. Rational drug prescribing is the use of the minimum number of drugs to obtain the best possible effect in the shortest period at a reasonable cost. Essential medicines are those that satisfy the priority healthcare needs of the population, selected based on evidence on efficacy and safety, comparative cost-effectiveness and public health relevance.^[10]
- Rational drug use requires that patients get medications and to meet their clinical needs in appropriate doses for an adequate duration and at an affordable cost. It minimizes the incidence of adverse drug events and maximizes the benefits that can be derived from the optimal use of medications. Rational use of drugs can also result in optimal use of health care resources.

- Now a days practice of irrational prescribing has become a leading cause in maintaining the proper prescribing standards of the patient in order to meet their clinical needs. Some of the most common irrational medicine use are:
- ✓ Polypharmacy.
- ✓ Frequent use of antibiotics.
- ✓ Inadequate dosage.
- ✓ Over-use of injections when oral formulations would be more appropriate for patient convenient.
- \checkmark Failure to prescribe in accordance with clinical guidelines.
- ✓ Prescribing by brand names and inappropriate self-medication.
- Irrational use of drugs result in treatment failure, adverse drug events and increased cost on patients and society. Exposure to multiple drugs is associated with increased risk of adverse drug reactions. Indiscriminate utilization of antibiotics also results in antibiotic resistance to an infectious diseases and the need for drugs other than the prescribing of generic drugs may lead to the alternatives which may not be available or unaffordable and that may result in the loss of patient confidence in the health care system.

RESEARH METHODOLOGY:

STUDY DESIGN: This is a Prospective Cross-sectional study.

STUDY SITE: The present study was conducted in Dermatology department at Viswabharathi Super Speciality Hospital, Gayathri Estate, Kurnool, Andhra Pradesh, India.

STUDY DURATION: The study was conducted for the time period of 6 months ,i.e, from month of November 2021 and ended in May 2022 (6months)

STUDY POPULATION: A total of 575 prescriptions were enrolled who attended to the Dermatology, OPD.

PATIENT ENROLLMENT: A total of 575 Patients of various skin diseases were evaluated by the Dermatologist; patients were selected based on their inclusion and exclusion criteria of the study.

INCLUSION CRITERIA:

- This study includes the participants who are suffering with various skin infections.
- Age >2 years and <80years.
- Either gender is considered.
- Patients who are willing to participate in the study.

EXCLUSION CRITERIA:

- Patients with age <2 years and >80years.
- Pregnants and breast feeding women.
- Patients who are not willing to participate in the study.

STUDY MATERIALS:

- Patient Data Collection Proforma
- WHO Prescribing Indicators

STUDY PROCEDURE:

The study was begun with the selection of the subjects based on inclusion criteria and exclusion criteria followed by collection of all the required parameters of the patients using a self-prepared structural patient data collection proforma which includes patient demographic details, past medical history, Chief complaints, past medication history, personal habits, allergies, family history, laboratory investigations, Diagnosis, Treatment, Follow Up, if required. Each and every prescription of a respective patient was taken and noted for the details related to number of drugs given in a prescription, number of generic drugs given in a prescription, whether the antibiotics and injectables are given in each prescription, If yes it should be given score as 1, and if not the score should be given as 0 and number of drugs given as per the WHO Essential drug list / Local Formulary.

The above details are taken as per the WHO prescribing indicators to evaluate the RDU and misuse of any one of these parameters was taken as indication of an improper practice of prescription. The Prescriptions were subjected to critical evaluation using WHO prescribing indicators.

a) Average number of drugs per encounter was calculated by dividing the total number of different drug products prescribed by the number of encounters surveyed.

b) Percentage of drugs prescribed by generic name was determined by dividing the number of drugs prescribed by generic name by the total number of drugs prescribed, multiplied by 100.

c) Percentages of encounters with an antibiotic prescribed were calculated by dividing the number of patient encounters during which an antibiotic was prescribed by the total number of encounters surveyed, multiplied by 100.

d) Percentage of drugs prescribed from essential drug.

e) Percentage of fixed-dose combination prescribed:

All the findings were recorded, compiled, tabulated and analyzed. The analyzed data were expressed in percentage and the results should be within the given optimal values.

DATA ANALYSIS: The statistical analysis was carried out by using Microsoft excel. The information was subjected to descriptive statistical analysis and expressed as mean and percentages.

RESULTS:

In our study, out of 575 patients 337(59%) were males and 238(41%) were females. In this study male population were more when compared to female population. Out of 575 patients, 159(28%) patients were found between the age group of 21-30, 112(19%) were in between 31-40, 84(15\%) were in between 11-20, 78(13.5\%) were in between 41-50, 72(12.5\%) were in between 51-60, 43(7\%) were in between 61-70, 27(5\%) were in between 2- 10. The results were shown in the table 1.

AGE GROUP	MALE	FEMALE	TOTAL	PERCENTAGE
02-10	27	0	27	5%
11-20	61	23	84	15%
21-30	87	72	159	28%
31-40	48	64	112	19%
41-50	44	34	78	14%
51-60	42	30	72	13%
61-70	32	11	43	7%

Table no.1Patient distribution based on age and gender

Based on the clinical diagnosis as revealed by the medical records, the prevalence of skin diseases observed in this study comprised of 235(40.8%) of infectious diseases, 116(20.17%) of allergic conditions, 89(15.4%) of papulosquamous diseases, 61(10.6%) of itching conditions, 25(4.3%)of pigmentary diseases, 22(3.82%)of non-infectious diseases, 22(3.82%)of miscellaneous diseases, 5(0.8%) of vitamin deficiencies which was shown in the table2.

Table no.2 Prevalence of different skin diseases

TYPES OF SKIN DISEASES	SUBTYPES	NO.OF CASES	PERCENTAGE
InfectiousDiseases	BacterialInfections	19	3.3
	FungalInfections	165	28.7
	Viral Diseases	18	3.13
	Parasitic Diseases	33	5.73
	Total	235	40.8
NonInfectious Diseases	AcneVulgaris	20	3.74
	Rocacea	2	0.34
	Total	22	3.82
	Allergic contact dermatitis	33	5.8
	Atopic dermatitis	16	2.8
Allergic Conditions	Seborrhoeic dermatitis	26	4.6
	Hand and FootEczema	14	2.4
	Asteotosis eczema	10	1.8
	Discoid eczema	17	2.9
	Total	116	20.17
Pigmentary Diseases	Vitiligo	6	1
	Melasma	7	1.2
	PostInflammatoryHyperpigmentation	7	1.2

Miscellaneous	Alopecia	2	0.3
	Acniticchelitis	1	0.2
	Xerosis	5	0.8
	Erythema	5	0.8
	FissureFoot	3	0.5
	Insect Bite Reaction	1	0.2
	Polymorphous Light Eruption	5	0.8
	Total	22	3.82

Out of 18 bacterial diseases, chronic bacterial prostatitis has been found to be highest in number 7(41%) followed by furuncle 5(29%), impetigo3(18%), leprosy 2(12%) and the results were shown in the figure 1.





Out of 166 fungal diseases, tinea corporis has been found to be highest in number 146(87.9%) followed by folliculitis11(6.6%), candidiasis6(3.6%), pityriasis vesicolor 3(1.8%) and the results are shown in the table3. Table no. 3 Fungal diseases categorizatio

FUNGAL DISEASES	NO.OF CASES	PERCENTAGE
Candidiasis	6	3.6%
Tinea	146	87.9%
Folliculitis	11	6.6%
Pityriasis Versicolor	3	1.8%

Out of 18 viral diseases, Herpes zoster has been found to be highest number 8(27.7%) followed by viral warts 5(27.7%), varicella zoster 3(16.6%), viral exanthem 2(11.1%) and the results are shown in the figure 2.



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Out of 33 parasitic diseases, scabies has been found to be highest number 28(84.8%) followed by pediculosis capitis 5 (15.1%) and the results are shown in the figure 3.



Figure no.3 Graphical representation of parasitic diseases categorization

Total number of drugs in 575 prescriptions was found to be 2049.Number of drugs per prescription varied from 1-10 in which the highest number was found to be three i.e;203(40%) followed by four 168(29.2%),two 96(16.6%),five 60(10.4%),six 22(3.8%), one 9 (1.5%), seven 7(1.2%),eight 6(1%), nine 2 (0.34%) and ten 2(0.34%) which was shown in the figure 1.





In this study of 575 prescriptions, it was observed that Average number of drugs per encounter was 3.56 and percent of generic drugs prescribed were 80.89%. The percentage of antibiotics prescribed were 28.8%, percent of injections prescribed were 0.69% and the percent of drugs prescribed from the WHO EDL were 82.91% which was shown in the table4. Table no.4 WHO core drug prescribing indicators

S.NO	PARAMETERS	OUT PATIENT VALUE	STANDARD VALUE
1.	Average number of drugs prescribed per encounter	3.56	1.6-1.8
2.	Percentage of drugs by generic name	80.57%	100%
3.	Percentage of encounter with antibiotics	28.8%	20.0-26.8%
4.	Percentage of encounter with injections	0.69%	13.4-24.1%
5.	Percentage of drugs prescribed from the WHO EDL	82.91%	100%

Among 2049 drugs, 60.5%(1240) were in tablet forms followed by 22.3%(457) creams, 4.9%(102) capsules, 4.63%(95) lotions, 2.5%(53) emulsions, 2.2%(47) others, 0.87%(18) gels, 0.58%() syrups, 0.53%(11) ointments, 0.48%(10) powders, 0.19%(4) injections. Other formulations comprised of 0.68%(14) Shampoos, 0.39%(8) soaps, 0.14%(3) kits, 0.04%(1) face wash, 0.14%(3) jellies, 0.34%(7) sunscreens, 0.04%(1) oral paste, 0.04%(1) Minoxidil drops, and 0.34%(7) formulations not mentioned as shown in figure 5.



A total of 2049 drugs were prescribed from 575 prescriptions. Among them Antihistamines were the most prescribed drugs 457(22.30%) followed by 429(20.93%)Antifungals, 356(17.37%) Emollients and skin protectives, 331(16.15%) Vitamins and Minerals, 228(11.12%) Antibiotics 144(7.02%) Steroids and combinations,64(3.12&) Antacids, 11 (0.53%) Others. Others include 2(0.09%) Antihelmentics, 7(0.34%) Antivirals, 2 (0.09%) Anticonvulsants, 25(1.22%) Analgesics, 4 (0.19%) Kojicacid and the results were shown in figure6.

Figure no.6 Graphical representation of distribution of drugs based on pharmacological classification



Out of 429 Anitfungals prescribed Flucanazole was 177 (41.25%), Micanazole 172(40.09%), Clotrimazole 79(18.41%), and Itraconazole 1(0.23%) and the results were shown in Figure 7.



Out of 228 antibiotics prescribed Cefixime is found to be highly prescribed 79(34.64%) followed by Fusidic Acid 31 (13.59%0), Gentamycin28(12.28%), Azithromycin 27(11.84%), Amoxycillin 27(7.45%), Metronidazole 17(7.45%), Clindamycin 8(3.50%), Ceftriaxone 5(2.19%),Doxycycline 7(3.07%), Ciprofloxacin 3(1.31%), Adelne 2(0.87%), Cefotaxim 1(0.43%),Erythromycin 1(0.43%), Piperacilin+Tazobactum 1(0.43%) and Benzathine penicilin 1(0.43%) and the results were shown in the figure8. **Figure no.8 Graphical representation of Antibiotics Prescribed**



Out of 142 Steroids and combinations, Betamethasone was 65(44.36%), Betamethasone+Gentamicin 28(19.71%), Diprobate 16(11.26%),Betamethasone+Fusidic acid 10(7.04%), Fluticasone 5(3.52%), Mometasone 5(3.52%), Desonide 5(3.52%), Omnacortil 4(2.81\%), Clobetasol 3(2.11\%), Eumerasone 2(1.40\%), Betamethasone+Diprobate 1(0.70\%) and the results are shown in figure 9.



DISCUSSION:

Out of 575 subjects, 337 were males and 238 were females. Where males are higher than females. Our study was supported by "Mohamed Saleem et al Assessment of drug prescribing patterns in dermatology out patient department in a tertiary care hospital, Malabar, Kerala." Based on the clinical diagnosis revealed by medical records, the prevalence of skin diseases is observed. The categorization of disease conditions shows infectious diseases on the top with 40.8% followed by allergic conditions with 20.17%, papulosquamous diseases with 15.4%, itching conditions with 10.6%, pigmentary diseases with 4.3%, non-infectious diseases with 3.82%, miscellaneous diseases with 3.82% and vitamin deficiencies with 0.8%. Our results were supported by "D Rewemanu et al Pattern of skin diseases and prescribing practice in dermatology in public and faith based hospitals in three regions of Tanzania." Within the infectious diseases, fungal infections were more (70%). Among bacterial infections, chronic bacterial prostatitis is more

Within the infectious diseases, fungal infections were more (70%). Among bacterial infections, chronic bacterial prostatifis is more with 41%. Our study results are different from the results of "T. Praveen Kumar et al Epidemiological study of various skin diseases and prescription pattern of drugs in dermatological out patient department, Khammam region." Where Out of 43 bacterial diseases, Acne found to be highest in number 21(48.8%) followed by bullous impetigo 14 (32.5%), Furuncle 3 (6.9%).

Among fungal infections, Tinea was found to be highest with 87.9%. Among viral infections, herpes zoster were found to be more with 44.4%. Among parasitic infections, scabies is on top with 84.8%. Our study results were supported by "T. Praveen Kumar et al Epidemiological study of various skin diseases and prescription pattern of drugs in dermatological out patient department, Khammam region." Out of 59 fungal diseases Tinea has been found to be highest in number 31 (52.8%), out of 11 viral diseases, Herpes zoster has been found to be highest in number 4 (36.36%), Scabies is the only parasitic disease of 85 cases. In our study, average number of drugs per encounter was 3.56 which is more when compared to standard WHO recommended value (1.6-1.8).

The number of drugs per encounter was ranging from one to ten. Three drugs per prescription are highest (40%) followed by four drugs per prescription (29.2%). It shows polypharmacy. This may increase the risk of drug-drug interactions, adverse drug reactions, poor medication adherence and this should be avoided. Our results were supported by "Rangam et al Assessment of drug use pattern using WHO prescribing indicators in a tertiary care hospital in Mangalore.

A total number of drugs were 2049 in which Antihistamine were highest (22.3%) followed by Antifungal drugs (21.13%), Emolients & skin protectives (17.37%), Vitamins and Minerals (16.5%), Antibiotics (11.12%), Steroids and combinations (7.02%), Antacids (3.12%) and others(0.53%). Others include (0.09%) Anti-helmentics,(0.34%) Antivirals, (0.09%) Anticonvulsants, (1.22%) Analgesics. Our results were supported by "Mohamed Saleem et al assessment of drug prescribing patterns in dermatology out patient department in a tertiary care hospital, Malabar, Kerala. In our study, antihistamines are prescribed in almost all prescriptions and Cetrizine is the only drug prescribed.

In our study, average number of drugs per encounter was found to be 3.56 which is higher than standard WHO recommended value. Average number of drugs per encounter should be ranging 1.6-1.8 i.e., our study shows polypharmacy. The percentage of drugs prescribed by generic names were found to be 80.57% which is lesser than the standard WHO range (100%). The percentage of encounter with antibiotics were found to be 28.8% which is higher than the standard WHO value (20.0-26.8%). Our study shows misuse of antibiotics which may develop resistance to antibiotics. Prescribing antibiotics should be limited. The percentage of encounter with injections were found to be 0.69% which is less than standard WHO range (13.4-24.1%). Our results show large difference from standard range. But, the lower range of injections usage will reduce the incidence of blood borne pathogenic infections, reduces the transmission of HIV infections and also reduce the non-compliance of patient to the treatment. The percentage of drugs prescribed from the WHO essential drug list was found to be 82.91% which is less than standard WHO range (100%). Our results show a lot better than the results of "Rangam et al Assessment of drug use pattern using WHO prescribing indicators in a tertiary care hospital in Mangalore.

CONCLUSION:

The major skin diseases identified from our study were tinea corporis, chronic bacterial prostatitis, scabies, herpes zoster among the infectious diseases, acne vulgaris among non-infectious diseases, allergic contact dermatitis among allergic conditions, psoriasis among papulosquamous diseases, urticaria among itching conditions. Public resources should make people aware of skin diseases and their preventive measures. So that we can reduce the burden of skin diseases in our society. The present study was undertaken to evaluate the drugs according to WHO prescribing indicator among the patients attending to dermatology outpatient department. In this study, the average number of drugs per prescription was considerably high than the WHO recommended prescribing indicators. Generic drugs prescribed and drugs prescribed from the WHO EDL were moderate which suggests the benefit of cost effectiveness. The percentage of injection use was low. The percentage of antibiotics prescribed was high according to who recommendation. From this study it is recommended that in service training on rational use of medicines especially antibiotics should be provided to both public and faith based prescribers. Irrational prescribing could be overcome by following ideal prescription writing. The results indicate that prescribing patterns of medications in the out-patient departments of hospitals should be considerably improved. Therefore, trainings and workshops should be organized from time to time to enlighten the prescribers on current trend in dermatological treatments.

LIMITATIONS AND FUTURE DIRECTIONS:

The study was conducted in the outpatient department of dermatology in Viswabharathi Super Speciality Hospital for a limited period time i.e., 6 months with less availability of resources and the number of patients included in the study were limited and study took place at single centred hospital which can't be sufficient to assess the prevalence of various skin diseases in a certain population over a certain time period. So, future studies can be directed to conduct in a controlled large population with a longer duration of time at various speciality hospitals.

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ABBREVATIONS:

OPD – Out Patient Department, **WHO** – World Health Organization, **INRUD** – The International Network for Rational Use of Drugs, **EDL** – Essential Drug List, **RDU** – Rational Drug Use, **TC** – Tinea Corporis, **SD** – Seborrheic Dermatitis, **HSV** – Herpes Simplex Virus **HFDM** – Hand, Foot and Mouth Disease , **MRSA** – Methicillin Resistant Staphylococcus Aureus MCN – Miconozole, **FCN** - Fluconazole , **IFA** – Iron Folic Acid, **TCA** - Trichloroacetic acid, **GBHC** - Gamma Benzene Hexachloride **REFERENCE:**

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