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PRESCRIBING TRENDS OF DRUGS AND WHO CORE PRESCRIBING INDICATORS AMONG PATIENTS WITH PSORIASIS IN A TERTIARY CARE TEACHING HOSPITAL

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ABSTRACT: Background: Psoriasis is a chronic inflammatory skin disease affecting 0.8% to 2.8% of the Indian population. Understanding drug prescribing patterns is vital for enhancing rational drug use. **Objectives:** This study aims to analyse the prescribing patterns of drugs in psoriasis patients, using WHO core prescribing indicators and to characterize these patterns by demographic variables. **Study Design:** An observational, cross-sectional, retrospective study was conducted in the dermatology department of a tertiary care hospital over one year, following IEC approval. Data were analysed using MS Excel. **Results:** A total of 148 psoriasis patients were enrolled, with an average age of 40.06 years and a male-to-female ratio of 3.9:1. A total of 701 drugs were prescribed, averaging 4.73 drugs per prescription, with 71% being generic. Additionally, fixed-dose combinations (FDCs) accounted for 104 of the prescriptions. Plaque psoriasis was the predominant clinical type, noted in 75.67% of cases, with steroids being the most commonly prescribed drug group. **Conclusion:** The findings reveal significant deficiencies in the prescribing patterns for psoriasis treatment. Implementing educational interventions for healthcare professionals is essential to promote rational drug use and improve patient management.

INTRODUCTION: Psoriasis is a chronic immune-mediated inflammatory skin disease that includes various subtypes such as plaque, guttate and pustular. It's heavily influenced by genetic factors, with heritability estimates between 60–90%. The disease can affect various body areas, including the scalp, face, nails *etc.* and it is essential to address associated health issues like psoriatic arthritis and cardiovascular diseases for comprehensive patient care [1, 2]. Studies indicate that psoriasis prevalence in India ranges from 0.8% to 2.8%, with males more affected than females.

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The condition commonly begins during the third to fourth decades of life, though it can manifest at any age, often with two peaks: at 20-30 years and 55-60 years [3, 4]. The clinical type of psoriasis is key when considering treatment options, as patients may experience multiple forms concurrently. Psoriasis is categorized into pustular and non-pustular lesions, significantly impacting patients' quality of life, both physically and psychologically [5]. Continuous care is often necessary due to the lack of a definitive cure and many patients feel their concerns are overlooked in treatment [6].

Healthcare professionals' treatment approaches vary based on factors like age, gender and personal preferences, but the economic and social burdens of the disease are often underestimated. Treatments requiring frequent medical visits can disrupt daily life. Therefore, it is vital for tertiary care hospitals

to monitor drug utilization patterns and ensure that newly graduated doctors have good awareness of rational drug use. This study purpose to conduct drug utilization research to enhance rational prescribing practices and improve patient care in psoriasis management [7].

Aim and Objectives: The primary aim of this study is to conduct a comprehensive analysis of drug utilization patterns in the treatment of psoriasis. Specific objectives include:

1. To assess the prescribing habits of healthcare professionals for psoriasis management.
2. To evaluate the impact of demographic factors (age, gender) on treatment choices.
3. To identify common treatments and their adherence to clinical guidelines.
4. To gauge the awareness and understanding of newly graduated doctors regarding rational drug use in psoriasis.

MATERIALS AND METHODOLOGY:

Study Design: This study was an observational, cross-sectional, retrospective and hospital-based single centre study.

Study Duration: The study was carried out over a period of 1 year from January 2023 to January 2024.

Sample size: All patients' prescriptions were issued at the dermatology OPD of SMIMER Medical College during the study period.

Patient Selection:

Inclusion Criteria:

1. Patients aged 18 years and older.
2. Patients who have provided informed consent to participate in the study.

Exclusion Criteria:

1. Patients with a history of hypersensitivity to medications.
2. Individuals currently undergoing treatment for other medical conditions.
3. Pregnant or breastfeeding women.

Study Procedure: Prior permission from the Head of the Department of Dermatology and approval from the Institutional Ethics Committee were obtained before starting the study. A Case Record Form (CRF) was designed for data collection, enrolling psoriasis patients who met the inclusion criteria. Information was recorded from case papers and analyzed using descriptive statistics (means, medians, and frequencies) in a Microsoft Excel 2016 spreadsheet. The analysis focused on general characteristics (demographic details and personal history), clinical diagnosis (types, duration, and PASI score), prescription patterns (generic and brand names, drug doses, routes, formulations, and NLEM (National List of Essential Medicines) 2022 status), usage patterns according to drug groups and WHO drug prescribing indicators.

RESULTS: In a study involving 148 psoriasis patients, the majority were male (79.73%), with a male to female ratio of 3.9:1. The mean age was 40.06 years, predominantly within the 21-40 age group **Fig. 1.** Notably, 12.16% of patients reported a history of smoking, while 16.22% had consumed alcohol, and 24.32% engaged in tobacco chewing **Fig. 2**. A significant portion of the patients were company employees (25.68%) and industrial workers (18.24%) **Fig. 3**. The leading clinical pattern observed was plaque psoriasis, accounting for 75.67% of cases, followed by guttate with plaque psoriasis and psoriatic arthritis **Table 1**.

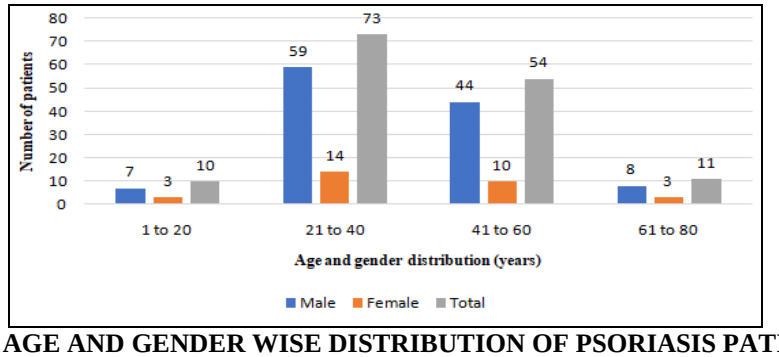

FIG. 1: AGE AND GENDER WISE DISTRIBUTION OF PSORIASIS PATIENTS

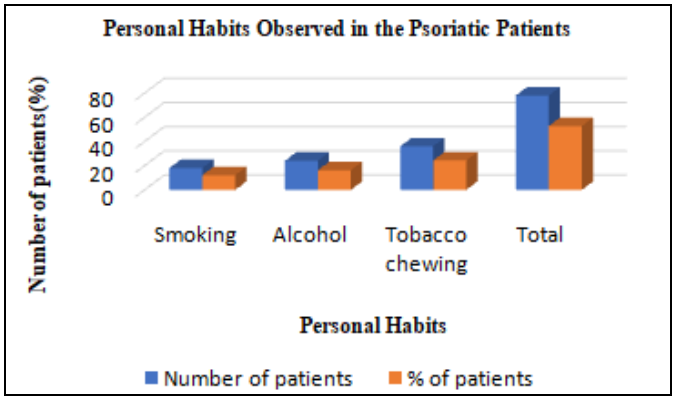

FIG. 2: PERSONAL HABITS OF PSORIASIS PATIENTS

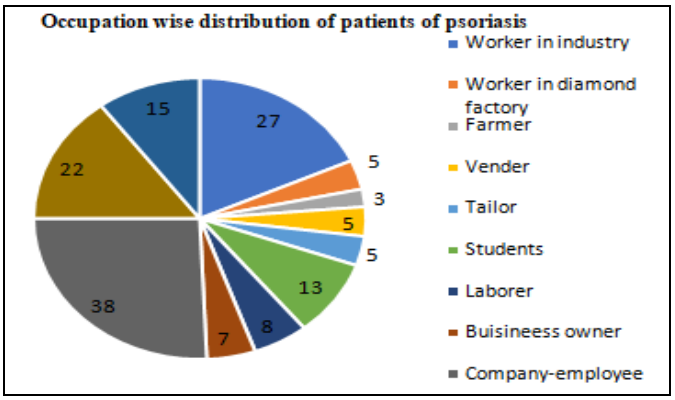

FIG. 3: OCCUPATION BREAKDOWNS PSORIASIS OF PATIENTS

TABLE 1: CLINICAL PATTERNS OF PSORIASIS

Clinical patterns	No. of prescriptions (n=148)	% of prescriptions
Plaque	112	75.67%
Palmoplantar	2	1.35%
Guttate	4	2.70%
Guttate with plaque	14	9.45%
Annular	1	0.68%
Linear	1	0.68%
Pustular	3	2.03%
Inverse	1	0.68%
Psoriatic arthropathy	10	6.76%

The study revealed that psoriatic patients had symptom durations ranging from 1 to 5 years, with the longest duration being 43 years. Psoriasis severity was categorized using the PASI score into mild (PASI <5; n=65, 43.92%), moderate (PASI 5-10; n=53, 35.81%), and severe (PASI >10; n=30, 20.27%) **Fig. 4**. The most common sites for psoriatic lesions were the lower limbs (71.62%), followed by the scalp (64.86%), trunk (64.19%), and upper limbs (62.84%) **Table 2**.

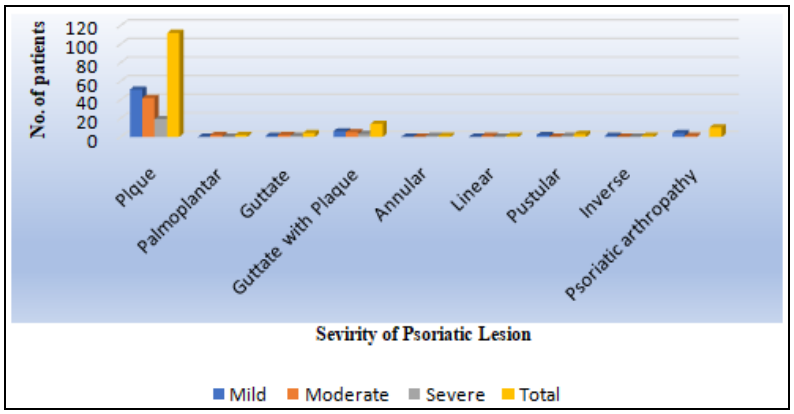

FIG. 4: SEVERITY OF LESIONS IN VARIOUS PSORIASIS TYPES

TABLE 2: DISTRIBUTION OF SITE OF PSORIATIC LESIONS

Site of psoriatic lesions	No. of prescriptions (n=148)	% of prescriptions
Scalp	96	64.86%
Face	5	3.38%
Trunk	95	64.19%
Upper Limbs	93	62.84%
Lower Limbs	106	71.62%
Nail	58	39.19%
Palm	35	23.65%
Sole	19	12.84%
Groin area	21	14.19%

The analysis of prescription patterns reveals notable instances of polypharmacy and a significant reliance on steroids.

A total of 701 drugs were prescribed across 148 prescriptions, averaging 4.74 drugs per prescription. Systemic drugs accounted for 384 prescriptions (54.78%), while topical treatments comprised 317 (45.22%) **Table 3.**

TABLE 3: ANALYSIS OF PRESCRIPTIONS

Total number of prescriptions	148
Total number of prescribed drugs	701
Average number of drugs prescribed per prescription	4.74
Total number of drugs prescribed by systemic route	384 (54.78%)
Total number of drugs prescribed by topical route	317 (45.22%)
Total number of topical FDCs	104
Total number of drugs prescribed by NLEM 2022 criteria	352 (50.21%)

71% drugs were prescribed by generic name **Fig. 5.** Corticosteroids were the most frequently prescribed, with 242 instances, followed by anti-histaminics (121) and vitamins (103). Notably, only 201 drugs (29%) were prescribed by brand name, primarily within the corticosteroid group **Fig. 6**.

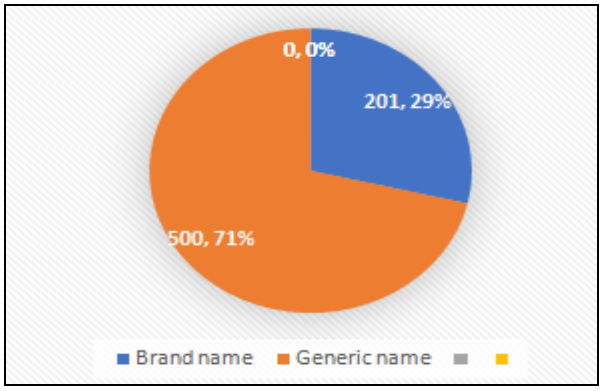

FIG. 5: GENERIC VS. BRAND NAME PRESCRIPTION TRENDS

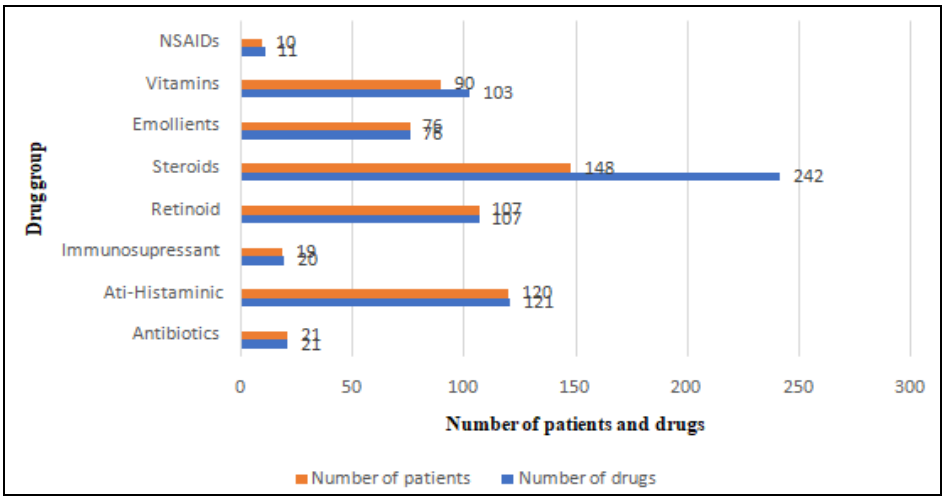

FIG. 6: DISTRIBUTION OF DRUGS BY CLASSIFICATION IN PRESCRIPTIONS

TABLE 4: SUMMARY OF PRESCRIBING INDICATOR DATA

Prescribing indicators	Average or percentage	WHO standards
Average number of drugs per encounter	4.74	2-3
Percentage of drugs prescribed by generic name	71.33	100%
Percentage of encounter with antibiotics prescribed	3.14	Less than 40%
Percentage of drugs prescribed from EDL	50.21	80-100%

DISCUSSION: According to the World Health Organization (WHO), drug utilization studies (DUS) are defined as "a study of the marketing, distribution, prescription and use of drugs in society, with a special emphasis on the social, medical, and economic consequences." These studies have the potential to provide an objective evaluation and analysis of health professionals' practices, offering them feedback that encourages reflection on their prescribing habits. Research on prescription patterns for psoriasis in the Indian population is limited. A total of 148 psoriasis prescriptions were analysed, encompassing patients aged 1-80 years with an average age of 40.06 ± 13.73 years. The majority of patients (49.32%) were aged 21-40 years. In contrast, another study reported a mean age of 42.48 ± 12.29 years, with the most patients (n=23) aged 41-55 years [8].

The gender distribution revealed 118 males (79.73%) and 30 females (20.27%), resulting in a male-to-female ratio of 3.9:1. The average age for male patients was 29.50 ± 22.63 years, while for females, it was 7.5 ± 4.71 years. In contrast, a study by Sinha Rajesh et al. reported 126 males (54%) and 107 females (46%), with mean ages of 34.06 ± 13.26 years for males and 26.54 ± 14.12 years for females [9]. Similarly, Asokan N *et al.* (2011) noted an average age of presentation of 40.3 ± 13.4 years for males and 34.7 ± 16.4 years for females, presenting a male-to-female ratio of 2.9:1 [10]. The differences in age and gender distribution may be attributed to the larger number of prescriptions analyzed in this study.

The most common type of psoriasis identified in this study was chronic plaque psoriasis, affecting 112 patients (75.67%), followed by guttate with plaque in 14 patients (9.46A similar study by N. Asokan *et al.* found that 89.5% of 246 patients had chronic plaque psoriasis, 12.7% had guttate psoriasis, and 3.3% had erythrodermic psoriasis [10]. These findings align with numerous Indian studies, supporting the prevalence of chronic plaque psoriasis in approximately 90% of cases [5, 11]. Only a small number of patients presented with psoriatic arthritis, pustular psoriasis, and palmoplantar psoriasis. In terms of disease duration, 32.43% of subjects had psoriasis for 1 to 5 years, 31.08% for up to 6 months and 18.24% for 6 months to 1 year. The duration ranged from a minimum of 15 days to a maximum of 43 years, with a mean of 18.5 ± 18.9 years. In contrast, Sekar S *et al.* reported an illness duration of 1 to 30 years, with a mean of 8.93 ± 7.02 years [12].

In our study, we calculated the PASI scores for patients with plaque psoriasis, which considers erythema, in duration, scaling and body surface area involvement [13]. Most patients from the tertiary care hospital had mild disease (n=65, 43.92%), followed by moderate (n=53, 35.81%) and severe (n=30, 20.27%). The mean baseline PASI score was 7.06 ± 5.55, which is consistent with findings from Varma SK *et al.,* who reported a mean PASI score of 8.97 ± 7.63 [8].

In the present study, 701 drugs were prescribed in 148 prescriptions, averaging 4.74 drugs per prescription. This aligns with a 2016 study by Barot *et al.,* which reported an average of 5.05 drugs in 120 prescriptions [6]. In the current study, 139 prescriptions included systemic drugs totaling 384 (54.78%), with an average of 2.76 systemic drugs per prescription. All 148 prescriptions also included topical treatments, totaling 317 (45.22%) drugs and averaging 2.14 topical drugs per prescription. This distribution aligns with a study by Vena GA *et al.,* which reported 60% topical and 40% systemic usage [6]. Additionally, 104 fixed-dose combinations (FDCs) and 67 single topical treatments were prescribed, comparable to Rashed MR *et al.'s* finding of 32.43% FDCs [14].

In the present study, 71% of drugs were prescribed by their generic names, while 29% were prescribed by brand names, with steroids primarily falling into the latter category. In contrast, another study indicated that 99% of prescriptions were for brand-name drugs [15]. Among the drug groups analyzed, steroids were the most frequently prescribed (242), followed by anti-histaminics (121) and vitamins (103). Clobetasol emerged as the most commonly used steroid for psoriasis patients, paralleling previous findings where it was the top prescribed steroid, accounting for 78% of cases in another study that involved 182 patients [15].

TABLE 5: WHO DRUGS PRESCRIBING INDICATOR FOR PSORIASIS

Prescribing indicators	Present study (n=148)	Patel D *et al* [16] (2021) (n=100)	Kolasani Bhanu Prakash *et al* [11] (2016) (n=75)
Average number of drugs per encounter	4.74	5.37	4.23
Percentage of drugs prescribed by generic name	71.33	100	36.91
Percentage of encounter with antibiotics prescribed	3.14	14.33	6.31
Percentage of drugs prescribed from EDL list	50.21	65.29	59.10

Strengths and Limitations of the Study: The strengths and limitations of this study are noteworthy. Among the strengths, the comprehensive analysis provides valuable insights into drug usage patterns. However, several limitations must be acknowledged. The retrospective design may introduce biases and limit the generalizability of the findings. Additionally,

the absence of outcome assessments restricts our ability to evaluate the effectiveness of the prescribed treatments. Highlighting these limitations is essential for interpreting the results and guiding future research.

CONCLUSION: In conclusion, this analysis highlights critical findings regarding drug usage patterns, notably concerns surrounding polypharmacy and the prevalence of generic prescribing. To promote rational drug use, it is essential to implement strategies that encourage appropriate prescribing practices, raise awareness of the risks associated with polypharmacy, and support the greater use of generics. By addressing these issues, we can enhance patient safety and optimize treatment outcomes.

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Declarations:

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Ethical Approval: The study was approved by the Institutional Ethics Committee (SMMIMER/IEC/OUT/NO88).

CONFLICT OF INTEREST: None declared

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