

Profile of dermatology inpatients and admissions over a four year period in a tertiary level government teaching hospital in North India

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Abstract

Background: Although dermatology is mostly an outpatient specialty, some patients with severe skin disease need hospital admission for management. There is a paucity of data regarding the profile of these dermatology in-patient admissions.

Aims: We studied the profile of patients admitted to the dermatology ward of our tertiary care government hospital in North India.

Methods: This was a retrospective analysis of discharge sheets of patients admitted in the dermatology ward from January 1, 2014 to December 31, 2017.

Results: Discharge sheets of 2032 admissions for 1664 patients were analyzed. The most common diagnoses in the admitted patients were immunobullous disorders (576, 28%), connective tissue diseases (409, 20%), infections, including leprosy and sexually transmitted infections (179, 8.8%), psoriasis (153, 7.5%) and reactive arthritis (92, 4.5%). The mean duration of admission was 13.95±11.67 days (range 1-118 days). Two hundred and fifty-six patients (15.38%) were re-admitted, accounting for 368 (18.11%) re-admissions. Patients with immunobullous disorders (OR 1.72, 95% CI 1.29-2.28) and psoriasis (OR 1.62, 95% CI 1.02-2.55) were more likely to be re-admitted. Adult patients, those who were admitted for more than four weeks, those who had comorbidities, and those who developed a complication during the hospital stay also had a greater likelihood of being re-admitted.

Limitations: The retrospective design of the study, and the non-availability of data regarding transfers to other specialties or intensive care units and deaths were the main limitations of this study.

Conclusion: This study describes the profile of patients admitted in a dermatology ward of a tertiary care centre in North India. The patient profile and admission characteristics associated with a higher probability of re-admission were identified.

Key words: Inpatient dermatology, admissions, re-admissions, hospital, ward

Plain Language Summary

Although dermatology is primarily an out-patient specialty, a subset of patients needs hospital admission for management. We retrospectively reviewed the characteristics of 1664 patients who were admitted a total of 2032 times to the dermatology ward of the All India Institute of Medical Sciences, New Delhi, over a period of four years (2014-2017). The most common diagnoses were immunobullous disorders and connective tissue diseases accounting for roughly half of the admissions, followed by infections, psoriasis and reactive arthritis. The average duration of admission was about two weeks and complications developed in about 10% of the admissions during hospital stay. Re-admission was needed in 15% of the patients, especially those with immunobullous disorders and psoriasis. Adult patients, those who were admitted for more than four weeks, those who had comorbidities, and those who developed a complication during the hospital stay also had a greater chance of being re-admitted.

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Introduction

Dermatology is primarily an out-patient clinical specialty. Although skin diseases are generally non-life threatening, they are associated with significant morbidity and a negative impact on the quality of life. Many hospitals do not have dedicated in-patient services for patients with severe skin diseases, and such patients are often admitted under the care of internists with dermatologists providing consultation services.¹ There is a paucity of literature regarding the profile of patients with skin diseases requiring hospital admission. This study reviews the characteristics of patients admitted over a four-year period to the dermatology ward of our institute.

Methods

We did a retrospective chart analysis of the discharge sheets of patients admitted in the dermatology inpatient ward of the All India Institute of Medical Sciences, New Delhi, India, a government tertiary care teaching hospital that caters largely to the population of North India. The dermatology ward has 29 beds, four of which are earmarked for providing isolation facilities for patients with extensive skin barrier loss. The ward is also equipped with two mechanical ventilators.

Discharge summaries of patients admitted in the dermatology ward between January 1, 2014 and December 31, 2017 were retrieved from the department's electronic database. Patients admitted exclusively for day care were not included in the study. Variables analyzed for all admissions included patient age, gender, duration of admission stay, primary dermatological diagnosis, comorbidities, complications, and inter-specialty consults during the hospital stay. We also looked at the number of re-admissions, primary dermatological diagnosis for re-admissions, reason for re-admission and the interval from the date of discharge to the date of re-admission.

Statistical analysis

As some patients were admitted more than once, characteristics such as gender and co-morbidities were presented for patients

(instead for all admissions) as recorded at the initial admission to avoid duplication of data, while results for complications and inter-specialty consults was presented for all admissions (including re-admissions) as these events would be unique for every admission. Continuous variables were presented as mean and standard deviation (median, interquartile range and absolute range), while categorical variables were presented as frequency (%). Continuous variables were compared using Student's *t*-test, and categorical variables using Chi-square test or Fisher's exact test. The patient profile and admission characteristics (patient age groups, gender, primary dermatological diagnosis, comorbidities, complications during admission and duration of hospital stay during first admission) associated with re-admissions were identified using logistic regression analysis. A *P*-value ≤ 0.05 was considered statistically significant.

Results

During the four-year study period, a total of 3,20,741 patients (approximately 80,000 patients per year) visited our out-patient department. There were 2831 admissions during this period with 48 deaths (1.7%). The discharge records of 2032 (71.8%) admissions for 1664 patients could be retrieved from our database for analysis, of whom 842 (51%) were males accounting for 1036 (51%) admissions. There were 280 (17%) children (age <18 years) and 1384 adults (83%) accounting for 327 (16%) and 1705 (84%) admissions respectively. The mean age of the patients at admissions was 34.8 ± 17.2 years (range 0.1–91 years). The year-wise break-up of admission numbers and patient characteristics is shown in Table 1.

Primary dermatological diagnoses, comorbidities and complications

Immunobullous disorders (576, 28%) and connective tissue diseases (409, 20%) constituted for about half of the admissions. Infections (179, 8.8%; including leprosy and sexually transmitted infections), psoriasis (153, 7.5%) and reactive arthritis (92, 4.5%) were also frequently admitted. The complete list of dermatological diagnoses is shown in Table 2.

Table 1: Year-wise break-up of admission numbers and patient characteristics

	Total	2014	2015	2016	2017
Total number of admissions	2831	674	677	716	764
Mortality	48 (1.7%)	12 (1.8%)	11 (1.6%)	17 (2.4%)	8 (1.1%)
Admissions analyzed	2032 (71.8%)	324 (48.1%)	563 (83.2%)	587 (81.9%)	558 (73%)
Number of patients	1664	294	465	473	432
Males					
- Admissions	1036	172	284	314	266
- Patients	842	154	225	246	217
Females					
- Admissions	996	152	279	273	292
- Patients	822	140	240	227	215
Mean age in years (range)	34.84±17.18 (0.1–91)	36.13±17.48 (0.6–91)	34.25±17.18 (0.1–79)	35.38±17.23 (0.1–84)	34.11±16.93 (0.1–78)
Mean duration of hospital stay in days (median, range)	13.95±11.67 (11, 1–118)	15.61±13.15 (12, 1–95)	13.26±11.71 (10, 1–118)	14.22±10.95 (11, 1–81)	13.40±11.38 (10, 1–109)

Table 2: List of dermatology diagnosis for all admissions (n=2032)

Dermatologic diagnosis	Frequency (%)
Immunobullous disorders	576 (28.2%)
Pemphigus vulgaris	455
Pemphigus foliaceus	58
Bullous pemphigoid	22
Cicatricial pemphigoid	12
Linear IgA disease	12
Epidermolysis bullosa acquisita	2
Others	15
Connective tissue diseases	409 (20.1%)
Systemic sclerosis	252
Lupus erythematosus	87
Dermatomyositis	31
SSc/RA overlap	6
SSc/DM overlap	9
SSc/SLE overlap	5
SLE/DM overlap	3
Morphea	7
Others	9
Infections (total)	179 (8.8%)
Cutaneous infections	93 (4.6%)
Mycetoma	25
Deep fungal infections	16
Cellulitis	14
Cutaneous tuberculosis	13
Suspected fungal or mycobacterial infections	8
Generalized verrucosis	4
Post-kala-azar dermal leishmaniasis	2
Others	11
Leprosy	64 (3.1%)
Sexually transmitted diseases	22 (1%)
Anogenital warts	5
Genital herpes	6
Vaginal discharge	4
Secondary syphilis	3
Others	4
Psoriasis	153(7.5%)
Reactive arthritis	92 (4.5%)
Cutaneous adverse drug reactions	86 (4.2%)
SJS/TEN	27
DRESS	24
Maculopapular rash	18
Fixed drug eruption	8
Erythroderma	3
Others	6
Erythrodermas	69 (3.4%)
Psoriasis	33
Dermatitis	22
Not specified	14
Genodermatoses	68 (3.4%)
Congenital ichthyosis	29
Inherited epidermolysis bullosa	10

(Contd...)

Table 2: (Continued)

Dermatologic diagnosis	Frequency (%)
Porphyria	8
Ectodermal dysplasia	5
Others	16
Dermatitis	59 (2.9%)
Atopic/endogenous dermatitis	28
Parthenium dermatitis	15
Others	16
Oral drug challenge	41 (2%)
Infantile hemangiomas and vascular malformations	41 (2%)
Vasculitis	32 (1.6%)
Chronic urticaria	30 (1.5%)
Cutaneous malignancies and lymphomas	28 (1.3%)
Basal cell carcinoma	2
Squamous cell carcinoma	6
Malignant melanoma	1
Kaposi sarcoma	1
Cutaneous T-cell lymphoma	17
Cutaneous B-cell lymphoma	1
Miscellaneous	129 (6.3%)
Including Neutrophilic dermatosis (18), histiocytosis (11) and PRP (11)	
Uncertain diagnoses	40 (2%)

SSc: Systemic sclerosis, RA: Rheumatoid arthritis, DM: Dermatomyositis, SLE: Systemic lupus erythematosus, SJS: Stevens-Johnson syndrome, TEN: Toxic epidermal necrolysis, DRESS: Drug reaction with eosinophilia and systemic symptoms

The mean duration of admission was 14 ± 11.7 (median 11, IQR 7–17, range 1–118) days. Patients with cutaneous lymphomas had the longest mean hospital stays of 25 days. Patients with reactive arthritis and cutaneous infections averaged hospital stays of 20 days, while stays were shorter (≈ 12 days) for immunobullous disorders, leprosy and dermatitis [Table 3].

Comorbidities were seen in 594 (40%, out of 1490 patients for whom co-morbidity data was available) patients. Up to four comorbidities were seen in these patients, including 435 (73%) patients with a single comorbidity, 130 (22%) with 2, 28 (5%) with three, and one patient with four comorbidities. The coexisting conditions in order of decreasing frequency were diabetes mellitus (149, 25%), hypertension (122, 21%), anemia (92, 16%), psoriatic arthritis (40, 6.7%), hypothyroidism (37, 6.2%), tuberculosis (34, 5.7%) and psychiatric disorders (33, 5.6%).

A total of 205 complications developed in 183 (10.5%, out of 1742 admissions for whom this data was available) admissions during their stay in the hospital. A single complication occurred in 161 of these admissions and two complications were noted in 22 admissions. The most common complications were treatment-related adverse events (110, 53.7%) and hospital acquired infections (89, 43.4%). Deep venous thrombosis and decubitus ulcers were rare and were seen in five and one admissions respectively, Treatment associated complications

Table 3: Hospital stay, complications, and interspecialty consultation rates for major diagnostic admission categories

Diagnosis	Admissions, n	Hospital stay, mean no. of days, (median, range)	Complications, n (%)	Interspecialty consults, n (%)
Immunobullous disorders	576	11.83±10.34, (8, 1–109)	69/486 (14.2)	276/477 (86.4)
Connective tissue diseases	409	13.04±8.57, (11, 1–81)	33/350 (9.4)	239/354 (67.5)
Psoriasis	153	13.45±13.71, (10, 1–95)	13/131 (9.9)	91/128 (71)
Cutaneous infections	93	20.16±17.78, (16, 2–118)	9/83 (10.8)	58/85 (68.2)
Reactive arthritis	92	20.50±17.65, (15, 2–80)	11/82 (13.4)	51/83 (61.4)
Drug reactions	86	15.37±10.07, (13, 2–50)	13/78 (16.7)	60/79 (75.9)
Erythrodermas	69	15.73±11.03, (12, 3–51)	8/59 (13.6)	35/60 (58.3)
Genodermatoses	68	10.52±6.07, (8.5, 2–27)	3/59 (5.1)	46/58 (79.3)
Leprosy	64	12.15±7.24, (10, 3–32)	3/54 (5.6)	28/54 (51.9)
Dermatitis	59	12.45±10.56, (10, 2–66)	4/52 (7.7)	34/53 (64.2)
Drug provocations	41	15.7±16.28, (12, 5–111)	0/38	15/38(39.5)
Infantile hemangiomas and vascular malformations	41	10.78±6.94, (10, 1–37)	3/36 (8.3)	15/36(41.7)
Vasculitis	32	20.81±13.37 (19, 4–51)	7/28 (24)	22/28 (78.6)
Chronic urticaria	30	11.66±8.39, (10.5, 1–37)	0/30	8/25 (32)
Sexually transmitted infections	22	15.04±7.97, (14.5, 2–40)	0/21	13/19 (68.4)
Cutaneous lymphomas	18	24.88±14.88, (21, 6–59)	2/17 (11.8)	14/16 (87.5)
Cutaneous malignancies	10	21.4±19.77, (15.5, 2–66)	0/7	9/10 (90)

comprised 77 cases of transaminitis, 17 of leukopenia, seven with acute kidney injury, five of thrombocytopenia, three infusion reactions and a single case of hemorrhagic cystitis.

Of the 89 hospital-acquired infections in 83 admissions, urinary tract infections were seen in 22, pneumonia in 21, cellulitis in 18, eczema herpeticum in 15, and sepsis in 13 admissions. The majority of hospital infections occurred in patients with immunobullous disorders (39/89, 43.8%). Hospital infections also occurred in connective tissue diseases (11, 12.3%), DRESS, psoriasis and erythroderma (5, 5.6% each), reactive arthritis (4, 4.5%) and leprosy (2, 2.2%).

Inter-specialty consultations were necessary in 1100 (63%, out of 1746 admissions for whom this data was available) admissions, with the maximum number of such consultations being nine in one case. A total of 1736 interspecialty consultations were conducted in these 1100 admissions, with 675 admissions needing a single consult, 290 needing two consults, 88 requiring three consults, and 47 (4.3%) needed four or more consults. The most frequently consulted specialties were endocrinology (289, 16.6%), internal medicine (219, 12.6%), pulmonary medicine (192, 11.1%), gastroenterology (110, 6.3%), ophthalmology (120, 6.9%), rheumatology (87, 5%) and psychiatry (68, 3.9%).

The duration of hospital stay, complications and interspecialty consultation rates per admission for the major categories of diagnoses are shown in Table 3.

Profile of hospital re-admissions

Two hundred and fifty six patients (15.4%) were re-admitted one or more times (range 1-10) for a total of 368 (18.1%) re-admissions. These 256 patients accounted for 624 (30.7%) of the 2032 admissions, and included 181 (70.7%) who

were re-admitted once, 56 (21.9%) who were re-admitted twice, 13 (5.1%) who were re-admitted thrice and 6 (2.3%) patients who were re-admitted four times or more (range 4–10). The mean interval between the date of discharge and re-admissions ($n = 368$) was 154.16 ± 193.97 days (median 70, IQR 24–211.5, range 2–1015 days). The 30-day and 1-year re-admission rates were 5.3% (108/2032) and 15.8% (322/2032), respectively. The time interval between discharge and re-admission is shown in Figure 1.

Among the re-admissions, immunobullous disorders ($n=134/368$, 36.4%) were the most common diagnosis, followed by connective tissue diseases ($n=68$, 18.5%), reactive arthritis ($n=40$, 10.9%), psoriasis ($n=34$, 9.2%) and erythrodermas ($n=16$, 4.3%). A detailed list of the reason for re-admissions is given in Table 4.

Table 5 shows patient and admission variables associated with re-admissions. Adults (OR 1.54), patients with long (> 4 weeks) hospital stays (OR 1.73), patients with immunobullous disorders (OR 1.72) or psoriasis (OR 1.62), and those with comorbidities (OR 1.46-1.59) or complications (OR 1.93) were more likely to be re-admitted. However, patients with drug reactions were significantly less likely to be re-admitted (OR 0.34).

Discussion

This study provides detailed information regarding the profile of admissions in the dermatology ward of a tertiary center in North India. Immunobullous disorders and connective tissue diseases were the most common diagnoses, accounting for almost half (48.5%) of the admissions. Other common diagnoses included psoriasis, infections, reactive arthritis and drug reactions. Of the immunobullous disorders, pemphigus vulgaris was the most common (455/576, 78.9%), while in the connective tissue

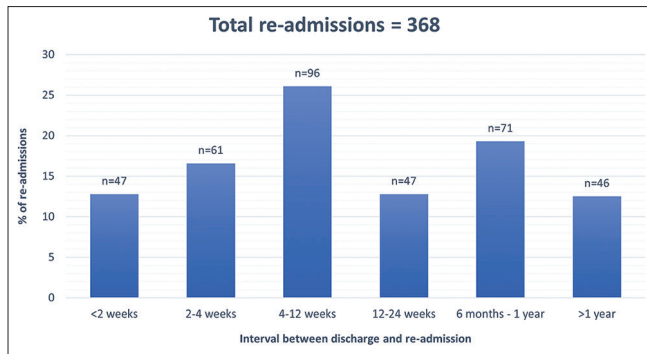


Figure 1: Break-up of time intervals between discharge and re-admission

Table 4: Reasons for re-admission (n=338)*

Reason	Number (%)
Administering subsequent doses of pulsed steroids or biologics	137 (37.5%)
Exacerbation of the primary dermatological disease	121 (32.8%)
Re-evaluation of the disease	17 (4.6%)
Treatment-related complications	16 (4.3%)
Oral drug challenge	7 (1.9%)
Unrelated to the primary diagnosis	40 (10.9%)
Infections	22
Comorbidities	9
Miscellaneous causes	9
*Reason for re-admission not available	30 (8.1%)

disease group, systemic sclerosis (including overlap syndromes) was most frequently seen (272/409, 66.5%).

The pattern of diagnoses in our inpatients was quite different from that seen in the West where dermatitis, psoriasis, chronic wounds and skin neoplasms figure prominently.²⁻⁶ Data regarding the profile of admitted dermatology patients from India and Asia are sparse, but as in the present study, immunobullous disorders were the most common in reports from East India⁷ and Iran⁸. The higher proportion of connective tissue diseases and reactive arthritis in our study may, at least in part, be due to the lack of in-patient rheumatology services at our hospital.

Infections, including leprosy and sexually transmitted infections, constituted 8.8% of admissions in our study whereas in the other Indian study by Sen *et al*⁷, they comprised 19.5% of all admissions. Dermatitis, reported to be the most common admission diagnoses (16–44%) in studies from the West,^{2,4-6} made up only 2.9% of our admissions, and about 5% in the study by Sen *et al*.⁷ Similarly, cutaneous lymphomas and malignancies comprised only 1.3% of our admissions in comparison to 6–36% of admissions in the West.^{2,3,6} Notably, about 2% of our admissions had an uncertain diagnosis even at discharge, reflecting the complex patient profile and diagnostic dilemmas that present to us.

The mean hospital stay of 14 days in our study was similar to the average 13 days hospital stay reported from Brazil.⁴

Shorter hospital stays of 11, 10, 7 and 4 days respectively were noted in studies from UK⁶, Australia⁹, Spain³, and the USA² but longer hospital stays of over 20 days were reported in the study by Sen *et al*⁷ and from South Africa.⁵ Our patients with cutaneous lymphomas and cutaneous malignancies had long hospital stays of over 21 days owing to multiple diagnostic and staging investigations. Patients with reactive arthritis also recorded long hospital stays (> 20 days) for administration of biologics and multiple inter-speciality consultations with rheumatology and pain management specialties. However, our patients with immunobullous disorders had relatively short hospital stays averaging 11.8 days, in contrast to the long stays of 22 days in other reports.^{4,5,7}

About 40% of our patients had one or more comorbidities. Diabetes mellitus and hypertension were the most frequent comorbidities.⁴ The complication rate of 10% was much lower than that (25%) reported in the study by Sen *et al*.⁷ Hospital-acquired infection were seen in 5% (89/1742) of our admissions which is similar to that (6%) reported in the Brazilian study,⁴ and were most frequent among patients with immunobullous disorders. Sepsis was documented in 0.75% our admissions. This is much lower than that (4.6%) reported in an earlier study from our ward in 2004–2006.¹⁰ Although this difference could be due to better hospital infection control practices currently followed, it is more likely that since the focus of the previous study was sepsis in the dermatology ward, it resulted in a more sensitive recording of sepsis-related data. Blood stream infections accounted for a third of all hospital acquired infections (translating into about 2% of all admissions) in the Brazilian study.⁴

About 15% (256/1664) of our patients were re-admitted, making up 30% (624/2032) of our total admissions. The re-admissions alone accounted for about 18% (368/2032) of our total admissions. The majority of these re-admissions (88%) were related to the primary dermatology diagnosis, while the remaining (12%) were re-admitted for unrelated reasons. In our study, 30-day re-admission rates were 5%, while they were 1.8% in a study from Spain,³ and 9.8% and 12.3% in two US studies.^{11,12} The one-year re-admission rate was 12.5% in the Spanish study in comparison to 16% in our study. Many patients with chronic skin illnesses discontinue treatment after initial recovery without further consultation, leading to disease flare-ups requiring re-admissions. One way to reduce the re-admissions is to ensure proper counseling at the time of discharge. Telephonic contacts with discharged patients a few weeks after discharge may help prevent such outcomes.

Patients with immunobullous disorders and psoriasis were more likely to be re-admitted than other conditions. The course of these diseases is marked with exacerbations or relapses, necessitating frequent hospitalizations. Psoriasis was reported as a frequent cause of re-admission in the study from Spain,³ while high re-admission rates were noted in patients with cutaneous lymphomas, connective tissue diseases and graft-versus-host

Table 5: Comparison of baseline admission profiles between patients with and without re-admissions

Baseline parameters	Patients with re-admission (n=256)	Patients without re-admissions (n=1408)	P-value	OR (95% CI)	P-value
Mean age (range) in years	35.24±15.5 (0.6–76)	34.88±18.03 (0.1–91)	0.802	-	
Age group (years)			0.005*		
Children (<18)	33 (12.9%)	247 (17.5%)		1.00	
Adults (18–59)	207 (80.9%)	1004 (71.3%)		1.54 (1.04–2.29)	0.030*
Elderly (≥60)	16 (6.3%)	157 (11.2%)		0.76 (0.41–1.43)	0.399
Gender			0.730		
Male	127 (49.6%)	715 (50.8%)		1.00	
Female	129 (50.4%)	693 (49.2%)		1.05 (0.80–1.37)	0.730
Mean duration of admission (median, range) in days	14.89±11.26 (12, 1–75)	13.89±11.31 (11, 1–111)	0.193	-	
Duration of admission (weeks)			0.047*		
<2	162 (63.2%)	955 (67.8%)		1.00	
2–4	64 (25%)	351(24.9%)		1.07 (0.79–1.47)	0.652
>4	30 (11.7%)	102 (7.2%)		1.73 (1.12–2.69)	0.014*
Number of patients with comorbidities	110/228 (48.2%)	484/1262 (38.4%)	0.005*		
0	118 (51.7%)	778 (61.6%)		1.00	
1	79 (34.6%)	356 (28.2%)	0.017*	1.46 (1.07–1.99)	0.017*
>1	31 (113.6%)	128 (10.1%)		1.59 (1.03–2.47)	0.036*
Number of patients with complications	32/210 (15.2%)	103/1206 (8.5%)	<0.002*		
0	178 (84.8%)	1103 (91.5%)	<0.002*	1.00	
≥1	32 (15.2%)	103 (8.6%)		1.93 (1.26–2.95)	0.003*
Number of patients with interspecialty consults	140/210 (66.6%)	750/1214 (61.8%)	0.176		
0	70 (33.3%)	464 (38.2%)		1.00	
1	89 (42.4%)	468 (38.6%)	0.387	1.26 (0.89–1.77)	0.179
>1	51 (24.3%)	282 (23.2%)		1.19 (0.81–1.77)	0.362
Diagnosis					
Immunobullous disorders	92 (35.9%)	346 (24.6%)	<0.001*	1.72 (1.29–2.28)	<0.001*
Connective tissue diseases	53 (20.7%)	288 (20.5%)	0.933	1.02 (0.73–1.41)	0.928
Psoriasis	26 (10.2%)	92 (6.5%)	0.046*	1.62 (1.02–2.55)	0.039*
Reactive arthritis	13 (5.1%)	39 (2.8%)	0.075	1.88 (0.98–3.56)	0.054
Cutaneous infections	06 (2.3%)	74 (5.3%)	0.055	0.43 (0.18–1.01)	0.051
Cutaneous adverse drug reactions	05 (1.9%)	77 (5.5%)	0.017*	0.34 (0.14–0.86)	0.022*
Erythroderma	13 (5.1%)	45 (3.2%)	0.138	1.62 (0.86–3.05)	0.134
Genodermatoses	05 (1.9%)	58 (4.1%)	0.109	0.46 (0.18–1.16)	0.103
Leprosy	07 (2.7%)	49 (3.5%)	0.706	0.78 (0.35–1.74)	0.544
Dermatitis	06 (2.3%)	48 (3.4%)	0.448	0.68 (0.28–1.61)	0.379
Drug provocation	02 (0.8%)	35 (2.5%)	0.106	0.31 (0.07–1.29)	0.108
Infantile hemangioma and vascular malformations	02 (0.8%)	37 (2.6%)	0.074	0.29 (0.07–1.22)	0.091
Vasculitis	03 (1.2%)	21 (1.5%)	1.000	0.78 (0.23–2.64)	0.694
Chronic urticaria	02 (0.8%)	25 (1.8%)	0.416	0.44 (0.10–1.86)	0.260
Sexually transmitted infections	02 (0.8%)	19 (1.3%)	0.759	0.58 (0.13–2.48)	0.459
Cutaneous lymphomas	01 (0.4%)	16 (1.1%)	0.496	0.34 (0.04–2.58)	0.298
Cutaneous malignancies	00 (0%)	10 (0.7%)	0.376	0.26 (0.02–4.44)	0.352

CI: Confidence interval, OR: Odds ratio

disease in reports from the USA.^{11,12} A longer stay during the first hospitalization and occurrence of complications were also associated with a higher re-admission rate in our study. The presence of comorbidities was another risk factor for re-admission.^{11,12} Children were less likely to require re-admissions, and this may be related to the less frequent occurrence of immunobullous disorders and psoriasis (associated with higher

rates of re-admission) in this age group. There were no gender differences for re-admission in our study but Arnold *et al.*¹¹ noted that females were more likely to be re-admitted. Arnold *et al.*¹¹ also noted that other factors such as having public medical insurance, belonging to a low-income community or admission in a large hospital were associated with higher rates of re-admission,¹¹ but we did not examine these variables.

In-patient dermatology services have been on the decline in the West.^{1,13} The need for dermatology wards has recently become the subject of debate, particularly with the development of newer, more efficacious treatments including biologics for severe skin diseases. It has been suggested that patients with skin diseases requiring in-patient care may be admitted under other specialist units with dermatologists providing consultative services.^{13,14} Although patients with skin disease as part of multisystem disease (e.g., an autoimmune connective tissue disease) or having significant comorbidities (e.g., uncontrolled diabetes or end-stage renal disease) may be better managed in a general medical ward with a visiting consultant dermatologist, there is no disputing the fact that patients with severe primary cutaneous disease such as psoriasis, dermatitis or pemphigus would be better managed in a dermatology ward with the dermatologist in direct control. Patients requiring oral drug provocation or those with a complex skin disease that is a diagnostic challenge would be best managed in specialist dermatology wards. The quality-of-life of patients with severe dermatological illnesses has been shown to significantly improve after hospital admission.^{15,16}

Being a tertiary care teaching institute, patients with severe and complex diseases are often referred to us who get admitted, while some patients are admitted for academic reasons also. Apart from the disease profile and severity, there may be administrative and other factors influencing dermatology admissions. Our institute being a government hospital with minimal healthcare charges may also influence admissions; hospitalizations are often needed for arranging or indenting medications and biologics for poor patients. Our institute caters to the population from the entire North India and patients coming from far off places requiring multiple dermatosurgery or ablative sessions are also often admitted. Other reasons for admission may include facilitating cross-consultations with other departments and admissions owing to lack of inpatient facilities in allied specialties (such as rheumatology).

Limitations

Limitations of our study include its retrospective design and some missing entries in the discharge summaries. As the data was searched from discharge summaries, information regarding transfers to other specialties or intensive care units, and mortalities was not available. Also, details not routinely recorded in the discharge sheets such as patient residence and socioeconomic status, as well as source of admission such as from outpatient service, emergency ward or if transferred from other specialty could not be analyzed.

Conclusion

Our study provides a glimpse of profile of patients admitted in a dermatology ward of a tertiary care center in North India. The pattern of admission diagnoses differed from that reported in western studies. A significant proportion of patients get re-admitted. Certain diagnoses, patient demographic characteristics and background medical profile

and those requiring a longer hospital stay or developing complications are more likely to be re-admitted.

Declaration of patient consent

The patient's consent is not required as the patient's identity is not disclosed or compromised.

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Conflicts of interest

There are no conflicts of interest.

References

1. Kirsner RS, Yang DG, Kerdel FA. The changing status of inpatient dermatology at American academic dermatology programs. *J Am Acad Dermatol* 1999;40:755-7.
2. Storan ER, McEvoy MT, Wetter DA, El-Azhary RA, Bridges AG, Camilleri MJ, *et al*. Experience with the dermatology inpatient hospital service for adults: Mayo Clinic, 2000-2010. *J Eur Acad Dermatol Venereol* 2013;27:1360-5.
3. García-Doval I, Feal C, Rosón E, Abalde MT, Flórez A, Cruces MJ. Inpatient dermatology: Characteristics of patients and admissions in a Spanish hospital. *J Eur Acad Dermatol Venereol* 2002;16:334-8.
4. de Paula Samorano-Lima L, Quitério LM, Sanches JA, Neto CF. Inpatient dermatology: Profile of patients and characteristics of admissions to a tertiary dermatology inpatient unit in São Paulo, Brazil. *Int J Dermatol* 2014;53:685-91.
5. Jessop S, McKenzie R, Milne J, Rapp S, Sobey G. Pattern of admissions to a tertiary dermatology unit in South Africa. *Int J Dermatol* 2002;41:568-70.
6. Munro CS, Lowe JG, McLoone P, White MI, Hunter JA. The value of in-patient dermatology: A survey of in-patients in Scotland and Northern England. *Br J Dermatol* 1999;140:474-9.
7. Sen A, Chowdhury S, Poddar I, Bandyopadhyay D. Inpatient dermatology: Characteristics of patients and admissions in a tertiary level hospital in Eastern India. *Indian J Dermatol* 2016;61:561-4.
8. Hasan S, Farshad F, Negin S, Parastoo D, Farzam G. Patterns of admissions to a Referral Skin Hospital in Iran. *Iran J Dermatol* 2008;11:156-8.
9. Bale J, Chee P. Inpatient dermatology: Pattern of admissions and patients' characteristics in an Australian hospital. *Australas J Dermatol* 2014;55:191-5.
10. Asati DP, Sharma VK, Khandpur S, Khilnani GC, Kapil A. Clinical and bacteriological profile and outcome of sepsis in dermatology ward in tertiary care center in New Delhi. *Indian J Dermatol Venereol Leprol* 2011;77:141-7.
11. Arnold JD, Crockett RM, Kirkorian AY. Hospital readmissions among patients with skin disease: A retrospective cohort study. *J Am Acad Dermatol* 2018;79:696-701.
12. Zhang M, Markova A, Harp J, Dusza S, Rosenbach M, Kaffenberger BH. Dermatology-specific and all-cause 30-day and calendar-year readmissions and costs for dermatologic diseases from 2010 to 2014. *J Am Acad Dermatol* 2019;81:740-8.
13. Finlay AY, Anstey AV. Dermatology inpatient care in the UK: Rarely possible, hard to defend but occasionally essential. *Br J Dermatol* 2019;180:440-2.
14. Stowd LC, Society of Dermatology Hospitalists. Inpatient dermatology: A paradigm shift in the management of skin disease in the hospital. *Br J Dermatol* 2019;180:966-7.
15. Esdaile B, Lally A, Ratnavel R. The need for dedicated dermatology beds. *Clin Med Lond Engl* 2011;11:300-1.
16. Ayyalaraju RS, Finlay AY, Dykes PJ, Trent JT, Kirsner RS, Kerdel FA. Hospitalization for severe skin disease improves quality of life in the United Kingdom and the United States: A comparative study. *J Am Acad Dermatol* 2003;49:249-54.